OKI

OL400*e*
LED Page Printer

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MAINTENANCE MANUAL

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PREFACE

This maintenance manual describes the field maintenance methods for OL400e.

This manual is written for use by maintenance personnel. Note, however, that the user should refer to the USER'S MANUAL for methods of handling and operating the equipment.

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1. CONFIGURATION

1. CONFIGURATION

1.1 System Configuration

OL400e consists of control and engine blocks as the standard configuration (See Figure 1-1.)

In addition, the following options are also available.

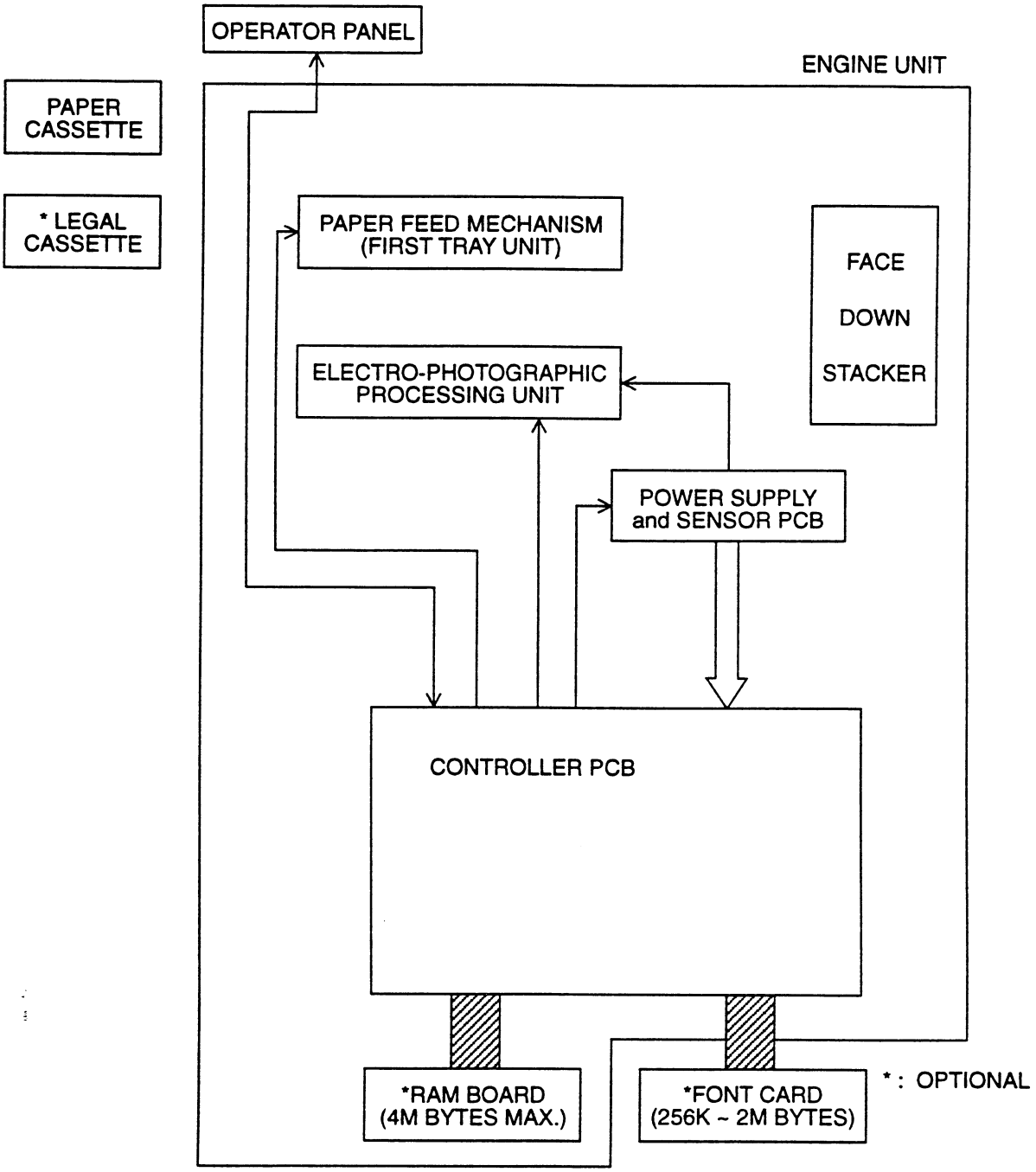


Figure 1-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electro-photographic processor
- Paper feeder
- Controller
- Operator panel
- Power supply unit

Figure 1-2 shows the printer unit configuration.

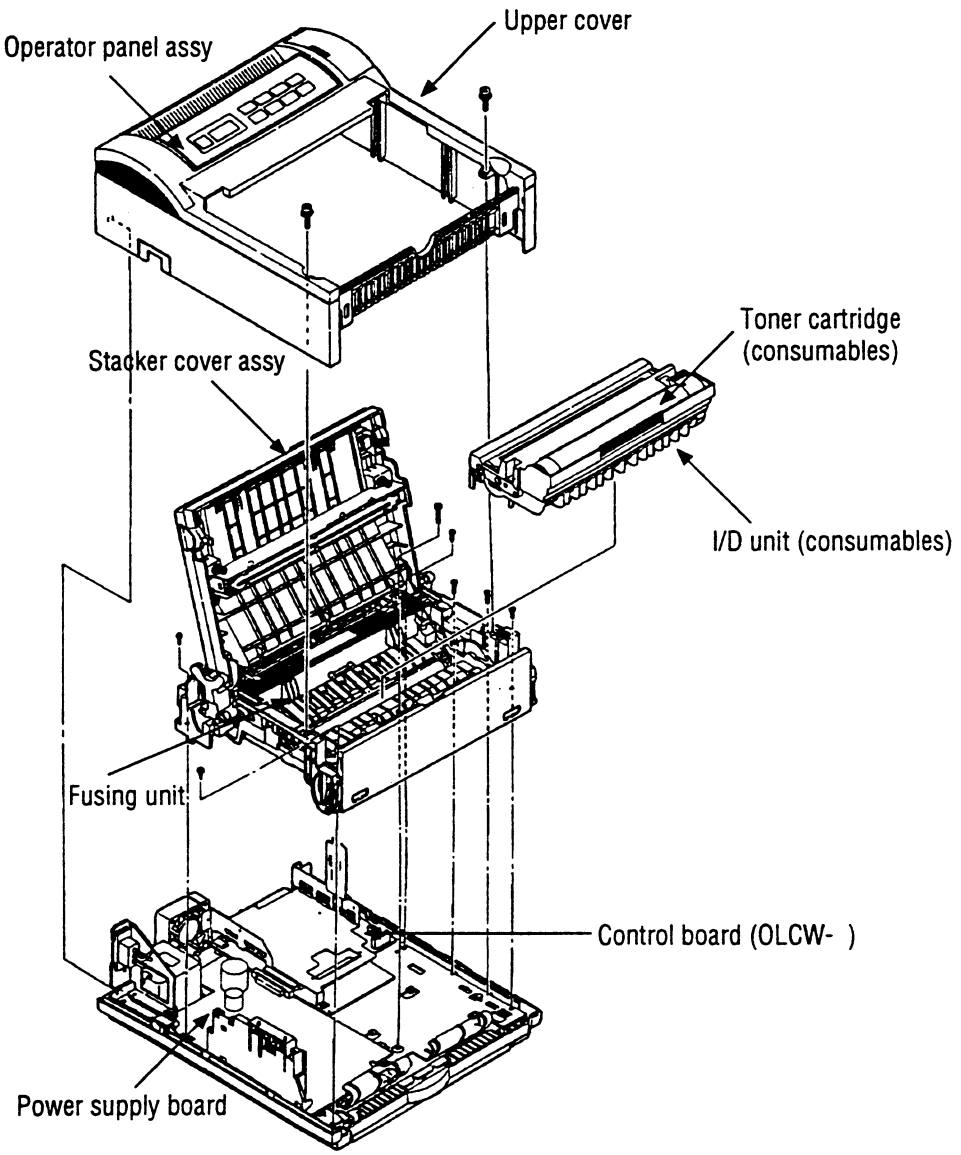
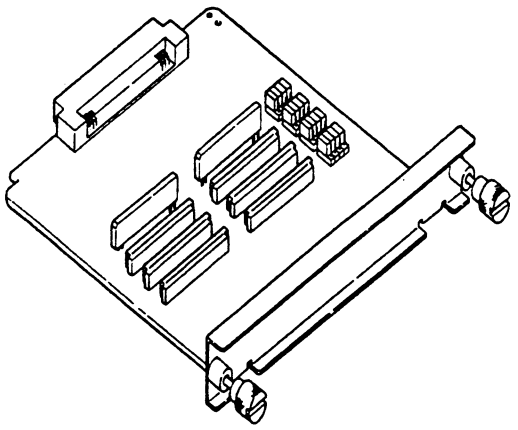


Figure 1-2

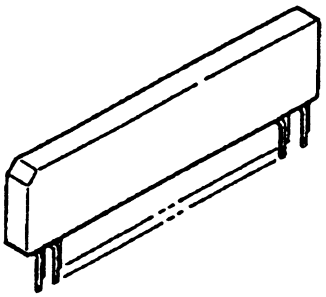
1.3 Optional Configuration

The options below are available for use with OL400e. They are sold separately from the printer unit.

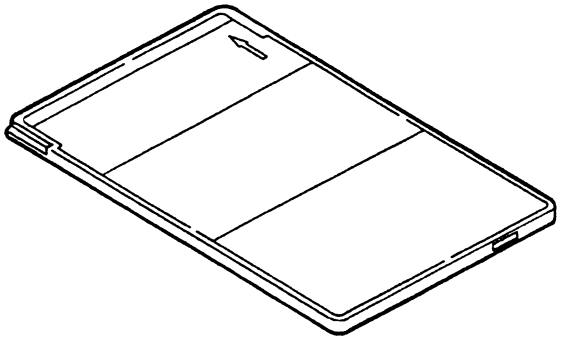
(1) 1MB Memory expansion board



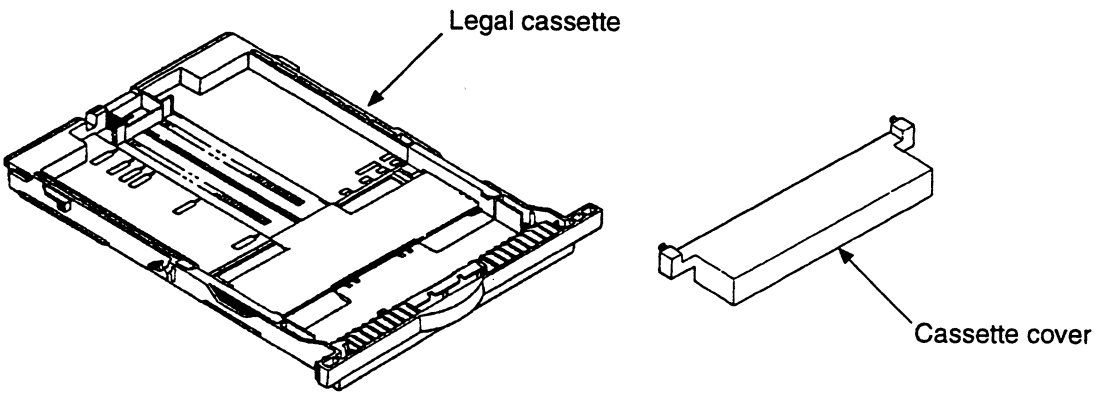
(2) 1MB Chip set kits (4M Bit D-RAM^{x2})



(3) Font card



(4) Legal/universal paper tray



1.4 Specification

(1)	Type	Desk top
(2)	External dimensions (excludes protruding Portion)	Height 6.3" (160 mm) Width 12.6" (320 mm) Depth 14.17" (360 mm)
(3)	Weight	8 kg
(4)	Development method	Dry electrophotography
	Exposure method	LED stationary head
(5)	Paper used	<Type>

- Standard paper
  - Xerox 4200 (20 lbs)
- Application paper (manual face-up feed)
  - Label
  - Envelope
  - OHP paper (Transparency)

<Size>

- Standard sizes
  - Letter (ODA)
  - Legal (option)
  - Executive
  - Envelope
  - A4 (OEL)
  - A5
  - B5
  - A6
- Applicable sizes
  - Width: 3.94" to 8.5" (100 to 216 mm)
  - Length: 5.83" to 14" (148 to 355.6 mm)

<Thickness>

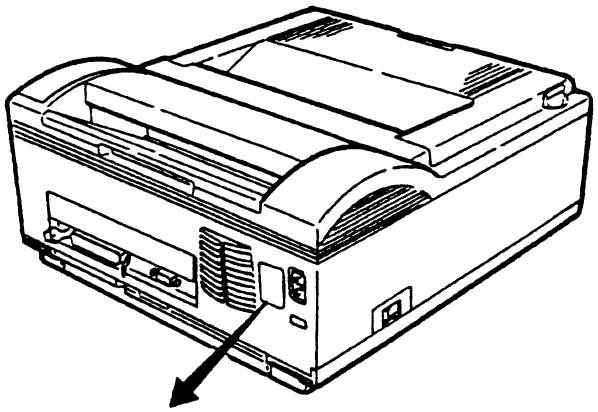
- Automatic feed: 16 to 24 lbs (60 to 90 g/m^2)
- Manual feed: Label, OHP paper (transparency) Envelope

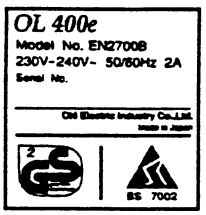
(6)	Printing speed	First print:	25 sec.
		Continuous print:	4 sheets/min.
		Warm-up time:	60 sec. [at room temperature 77˚F (25˚C) and rated voltage (120 VAC)]
(7)	Paper feed method	Automatic feed or manual feed	
(8)	Paper delivery method	Face down/face up	
(9)	Resolution	300 x 300 dots/inch	
(10)	Power input	120 VAC + 5.5%, –15% (ODA)	
		230 VAC + 10%, - 14% (ODA/OEL)	
(11)	Power consumption	Peak:	Approx. 600W
		Typical Operation:	Approx. 80W
		Idle:	Approx. 40W
		Power save mode:	Approx. 15W
(12)	Temperature and humidity	During operation:	50 to 90°F (10 to 32°C)
		In storage:	14 to 110°F (–10 to 43°C)
(13)	Noise	During operation:	50 dB (A) or less
		At standby:	45 dB (A) or less
(14)	Consumables	Toner cartridge kit	2,000 (5% duty)
		Image drum cartridge	20,000 (at continuouts printing)
			15,000 (3 page/job)
			10,000 (1 page/job)

1.5 Safety Standards

1.5.1 Certification label

The safety certification label is affixed to the printer in the position below.

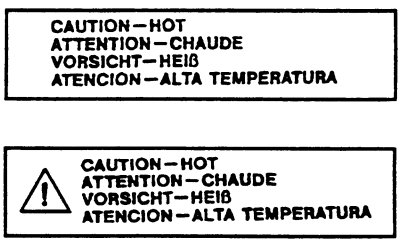


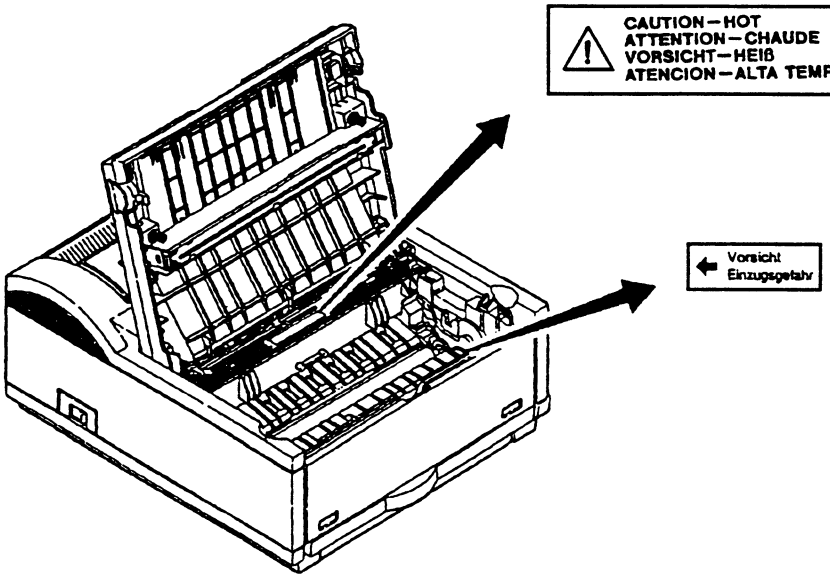


1.5.2 Warning label

The warning label is affixed to the portion which may cause an injury to human body.

Follow the instructions on warning labels during maintenance.





2. OPERATION DESCRIPTION

2. OPERATION DESCRIPTION

OL400e consists of a control board, a power supply/sensor board, an operator panel and an electro-photographic process mechanism.

The control board receives data through a host I/F, decodes and edits the data, and stores the edited data in a memory. After completing edition of one page of data, it references the font memory and generates bit data on the same memory. At the same time, it transfers the bit image data to an LED head in units of one dot line.

The electro-photographic process mechanism prints data on paper.

The operator panel is used for operations and status display.

Fig. 2-1 shows an OL400e block diagram.

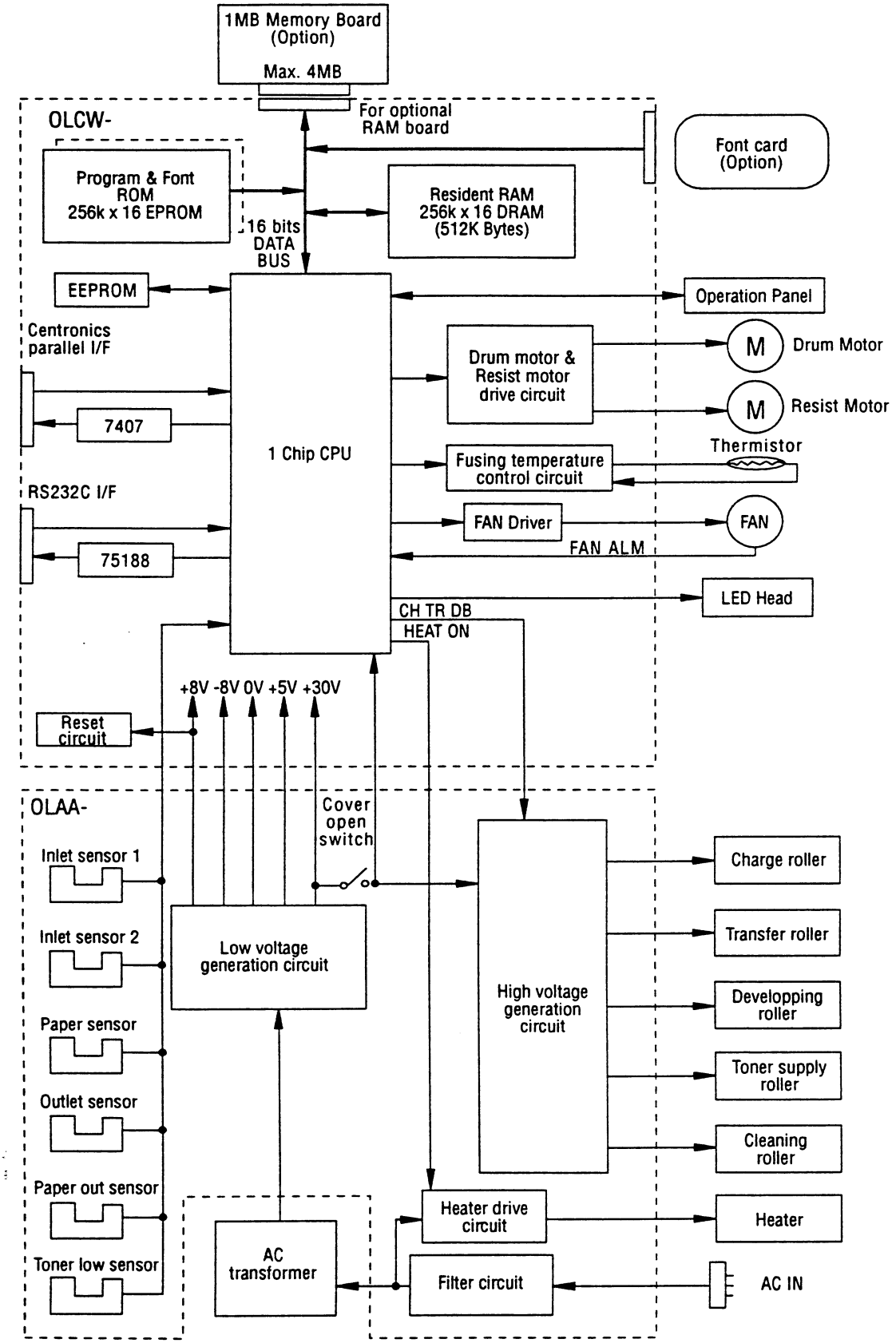


Figure 2-1 OL400e block diagram

2.1 Control Board

The control board consists of an one chip CPU, a program/front ROM, a DRAM, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) One-chip CPU

The one-chip CPU is a custom CPU (32-bit internal bus, 16-bit external bus, 16-MHz clock) that incorporates an RISC CPU and its peripheral devices, and has the following functions.

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DMA controller	Transfer of image data from DRAM to video output port
Parallel interface controller	Control of Centronics parallel interface
Serial interface controller	Control of RS-232C serial interface
Video output port LED STB output port	Control of LED head
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of operator panel, EEPROM, and options
I/O port	Inputting/outputting of sensor, signal and motor signal

(2) Program/font ROM

The program/font ROM stores the equipment program and various types of fonts. EPROM or masked ROM is used as an program/font ROM. The mounting locaition of this program/ font ROM varies according to the type of ROM. (For the mounting location, see 7.4.)

(3) DRAM

The DRAM is used as a resident memory (512K Bytes) such as a buffer, and stores edited data, image data, DLL data and macro data.

(4) EEPROM

1,024 bits electrically erasable PROM (EEPROM), which is loaded with following kinds of data.

- Menu data
- Various counter data (Page counter, Drum counter)
- Adjusting parameters (LED head drive time, print start position, paper feed length)

(5) Parallel interface

Parallel data is received from the host system via a parallel interface conforming to the Centronics.

(6) RS232C serial interface

Serial data is sent to and received from the host system via a serial interface conforming to EIA RS232C.

Following items are selectable.

Flow control:	DTR HI/DTR LO/XONXOFF/RBSTXON
Baud rate:	300/600/1200/2400/4800/9600/19200
Data bits:	7 BITS/8 BITS
Parity:	NONE/EVEN/0DD
Minimum busy:	200 mSEC/1 SEC

2.2 Power Supply Board

The power supply board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and a photosensors.

(1) Low voltage power supply circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	RS-232C line voltage
–8 V	RS-232C line voltage and analog circuit supply voltage

(2) High voltage power supply circuit

This circuit generates the following voltages necessary for electro-photographic processing from +30 V according to the control sequence from the control board. When cover open state is detected, +30 V supply is automatically interrupted to stop the supply of all the high-voltage outputs.

Output	Voltage	Use	Remarks
CH	-1.35 KV	Voltage applied to charging roller	
DB	-300 V/+300 V	Voltage applied to developing roller	
SB	-450 V/+450 V	Voltage applied to toner supply roller	
TR	+500 V to +4 KV/-750 V	Voltage aplied to transfer roller	Variable
CB	+400 V	Voltage applied to clearing roller	

(3) Photosensor

The photosensor mounted on this power supply board supervises the paper running state during printing.

Figure 2-2 shows the sensor layout diagram.

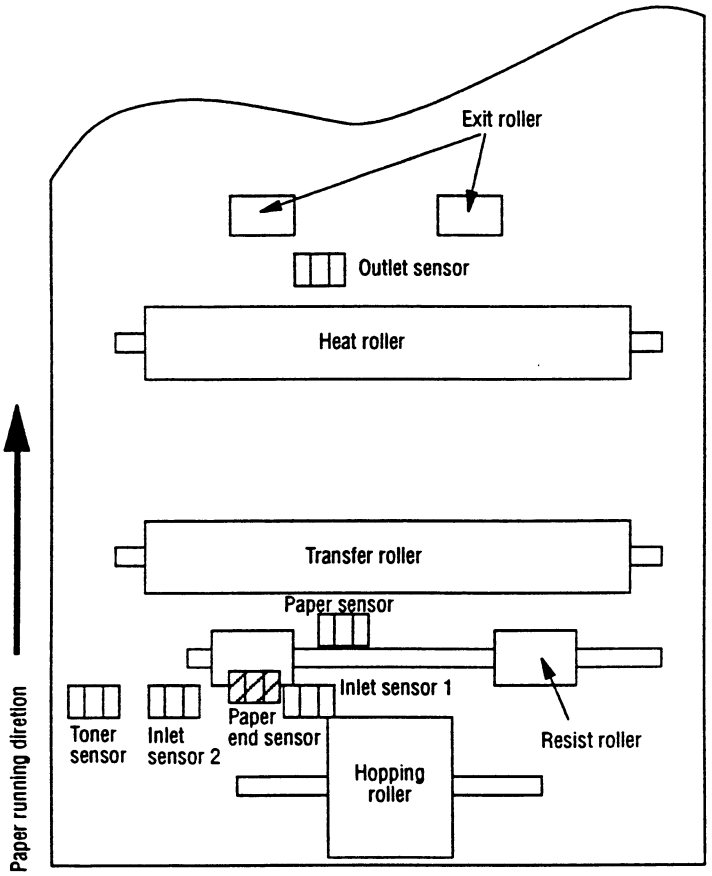


Figure 2-2

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Supervises the paper running state and the paper size according to the paper reach time and running time.	ON: Paper exists. OFF: No paper exists.
Intel sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading part of the paper. Supervises the paper running state.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Supervises the paper feed and size according to the time of arrival to the sensor and the time of passage of paper.	ON: Paper exists. OFF: No paper exists.
Paper end sensor	Detect the end of the paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of the toner.	- - - - -

2.3 Electro-photographic Process

2.3.1 Electro-photographic process mechanism

This mechanism prints image data from the control board on the paper by electro-photographic process.

The Figure 2-3 shows the layout of the electro-photographic process mechanism.

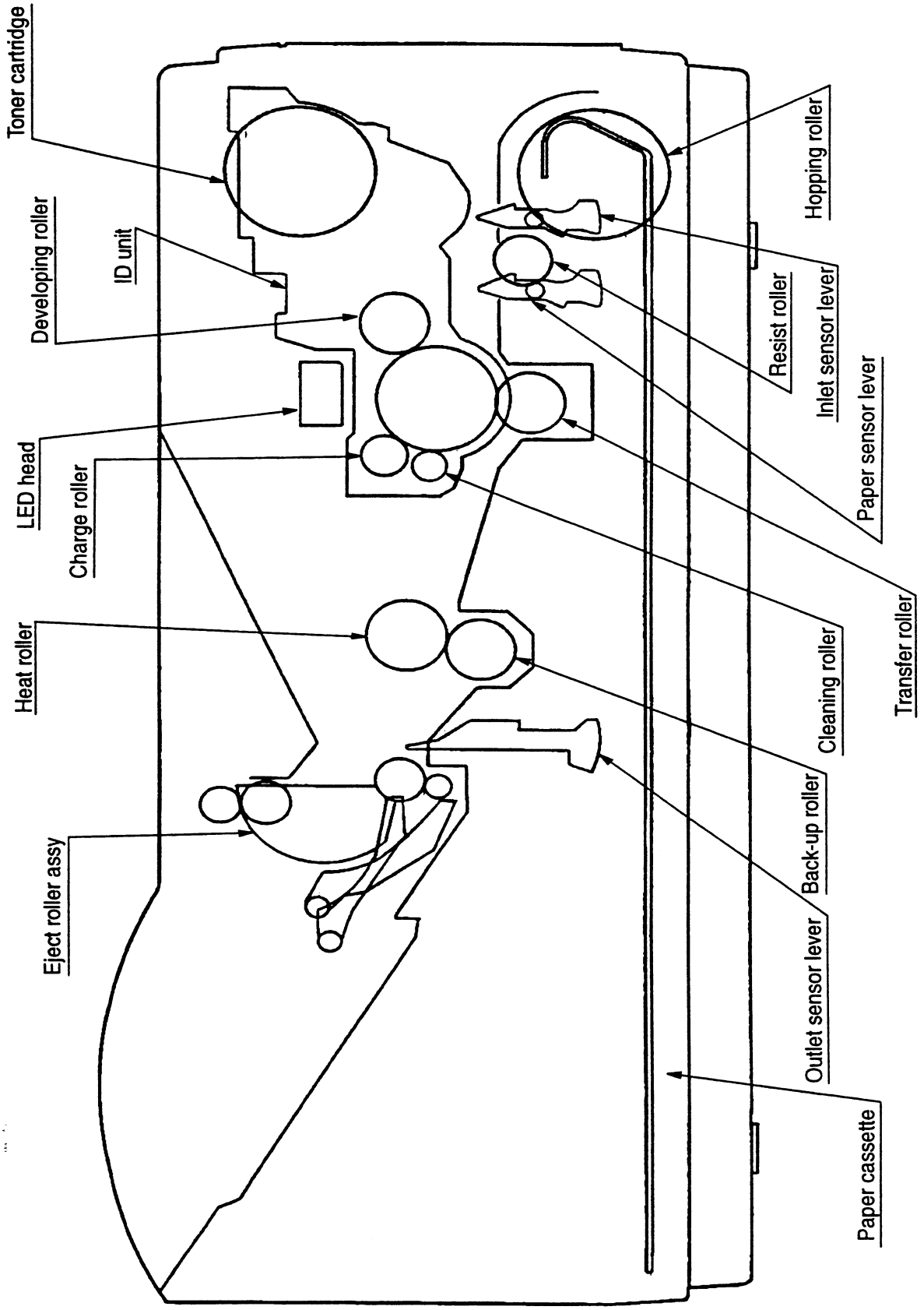

Toner cartridge
Developing roller
ID unit
LED head
Charge roller
Heat roller
Eject roller assy
Hopping roller
Resist roller
Inlet sensor lever
Paper sensor lever
Transfer roller
Cleaning roller
Back-up roller
Outlet sensor lever
Paper cassette

Figure 2-3

(1) Image drum unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Resist motor

This resist motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the hopping roller and the resist roller via two one-way clutches according to the direction of rotation.

(3) Drum motor

This drum motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board and is the main motor of this mechanism.

(4) LED head

Image data for each dot line from the control board is received by the shift register and latch register. The 2560 LEDs are driven to radiate the image data to the image dram.

(5) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.

An AC voltage from the power supply board is applied to the heater under the control of the HEATON signal from the control board. This AC voltage heats the heater. The control board supervises the heat roller temperature via the thermistor, and regulates the heater roller at a predetermined temperature (155°C) by connecting or disconnecting the AC voltage supply to the heater.

If the heater roller temperature rises abnormally, the thermostat of the heater voltage supply circuit is activated to cut the AC voltage supply forcibly.

2.3.2 Electro-photographic process

The electro-photographic processing is outlined below. Figure 2-4 shows the electro-photographic printing process.

① Charging

The surface of the image drum is uniformly charged with negative charges by applying a negative voltage to the charge roller.

② Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated part of the image drum surface is lowered, so that an electrostatic latent image associated with the print image is formed.

③ Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.

At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

④ Transfer

When paper is placed over the image drum surface and a positive charge, opposite in polarity to the toner, is applied to the reverse side of the paper from the transfer roller, the toner is attracted by the positive charge and is transferred to the paper. As a result, the toner image formed on the image drum is transferred to the paper.

⑤ Temporary cleaning

Residual toner that remains on the image drum without being transferred is made uniform by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

⑥ Fusing

The toner image transferred to the paper is fused under heat and pressure.

Figure 2-5 shows an electro-photographc process timing chart.

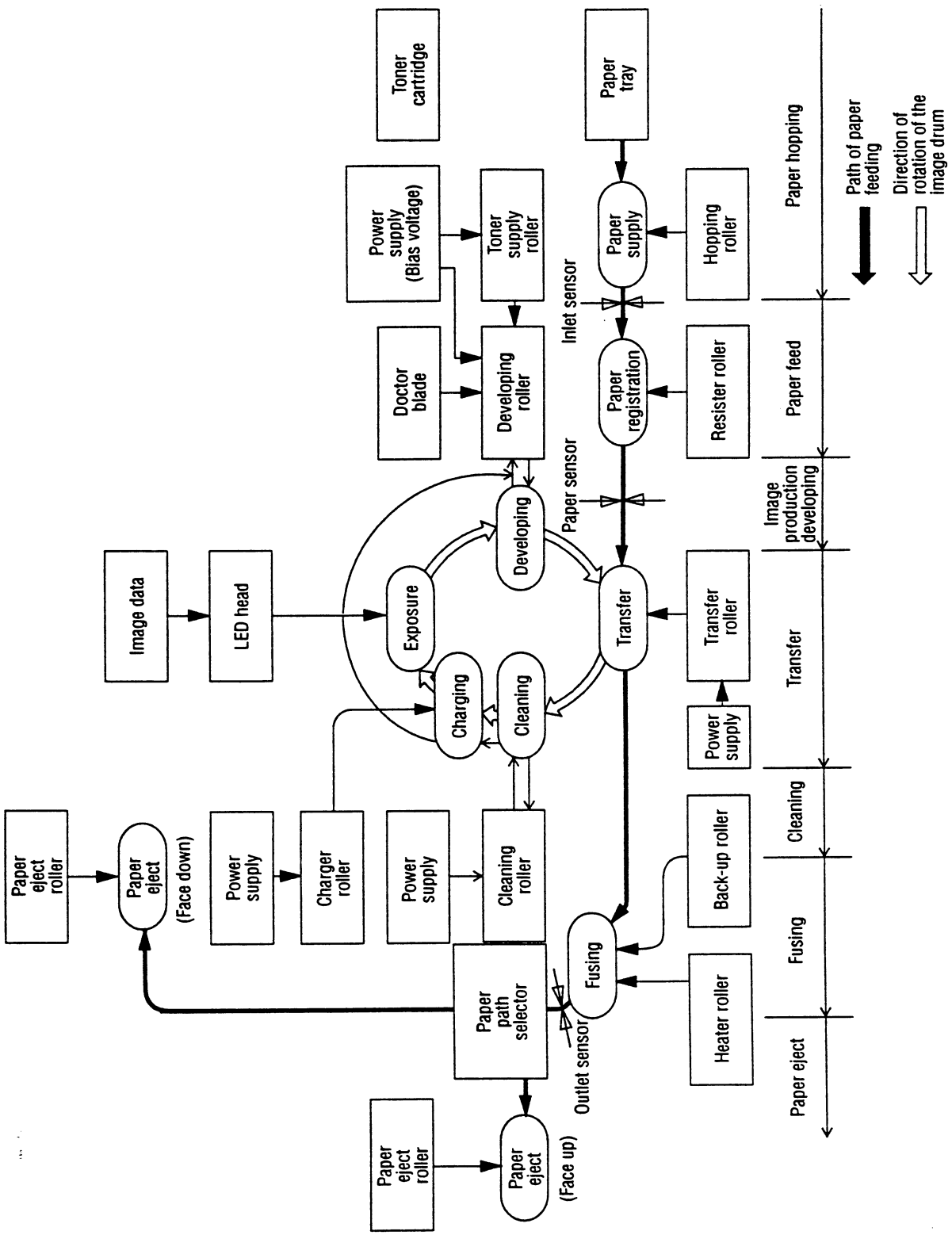

Toner cartridge
Paper tray
Power supply (Bias voltage)
Toner supply roller
Paper supply
Hopping roller
Paper hopping
Path of paper feeding
Direction of rotation of the image drum
Doctor blade
Developing roller
Inlet sensor
Paper registration
Resister roller
Paper feed
Image data
LED head
Exposure
Developing
Paper sensor
Image production developing
Transfer
Transfer roller
Charging
Cleaning
Power supply
Paper eject roller
Paper eject
(Face down)
Power supply
Charger roller
Power supply
Cleaning roller
Back-up roller
Cleaning
Paper path selector
Fusing
Heater roller
Fusing
Outlet sensor
Paper eject roller
Paper eject
(Face up)
Paper eject

Figure 2-4

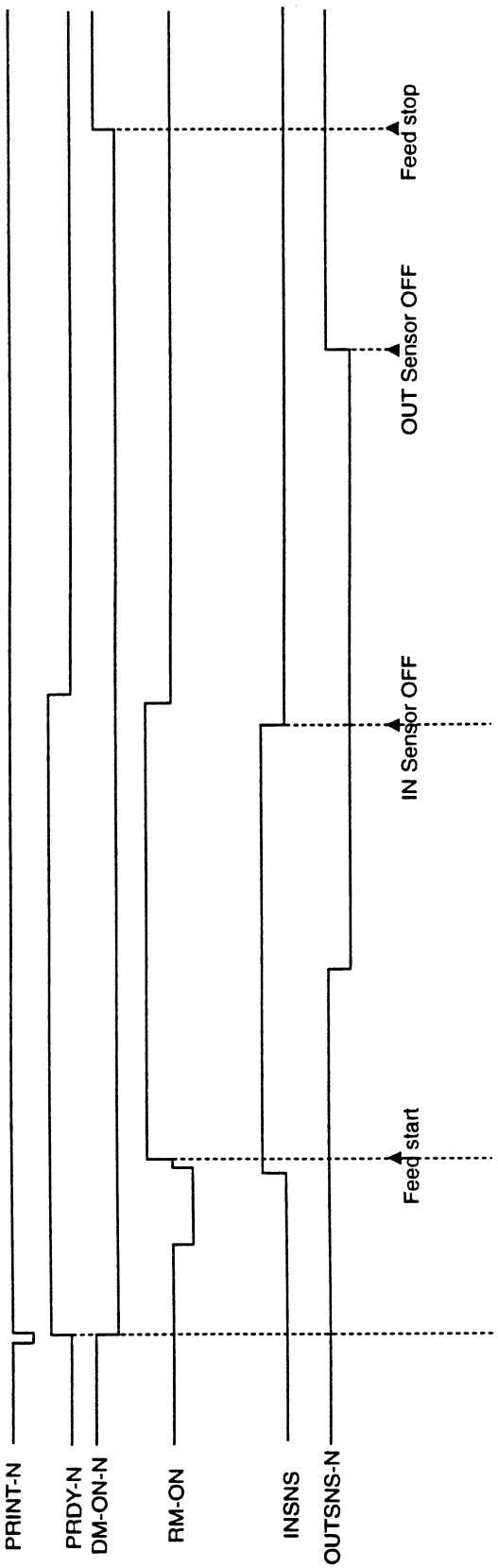
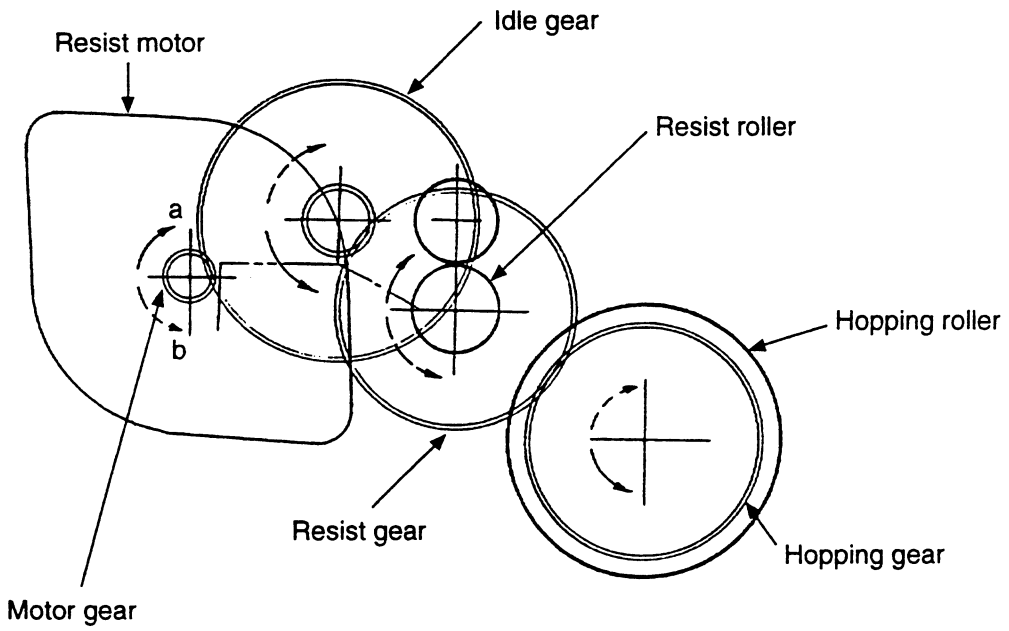

PRINT-N
PRDY-N
DM-ON-N
RM-ON
INSNS
OUTSNS-N
Feed start
IN Sensor OFF
OUT Sensor OFF
Feed stop

Figure 2-5

2.3.3 Process operation descriptions

(1) Hopping and feeding

Hopping and feeding are effected by a single resist motor in the mechanism shown below.

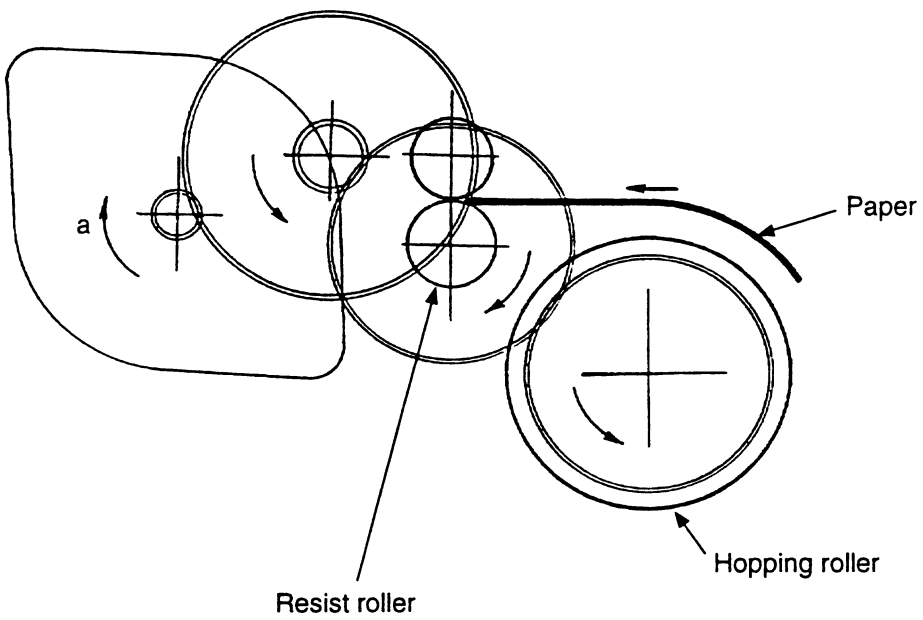


Turning the resist motor in the "a" direction drives the hopping roller. Turning the resist motor in the "b" direction drives the resist roller. The resist gear and hopping gear contain one-way bearing, so that turning each of these gears in reverse direction will not be transmitted to the corresponding roller.

(a) Hopping

① Hopping turns the resist motor in the "a" direction (in the CW direction) and drives the hopping roller to advance the paper until the inlet sensor turns on. (In this case, the resist gear also turns, but the resist roller is prevented from turninig by the one-way bearing.)

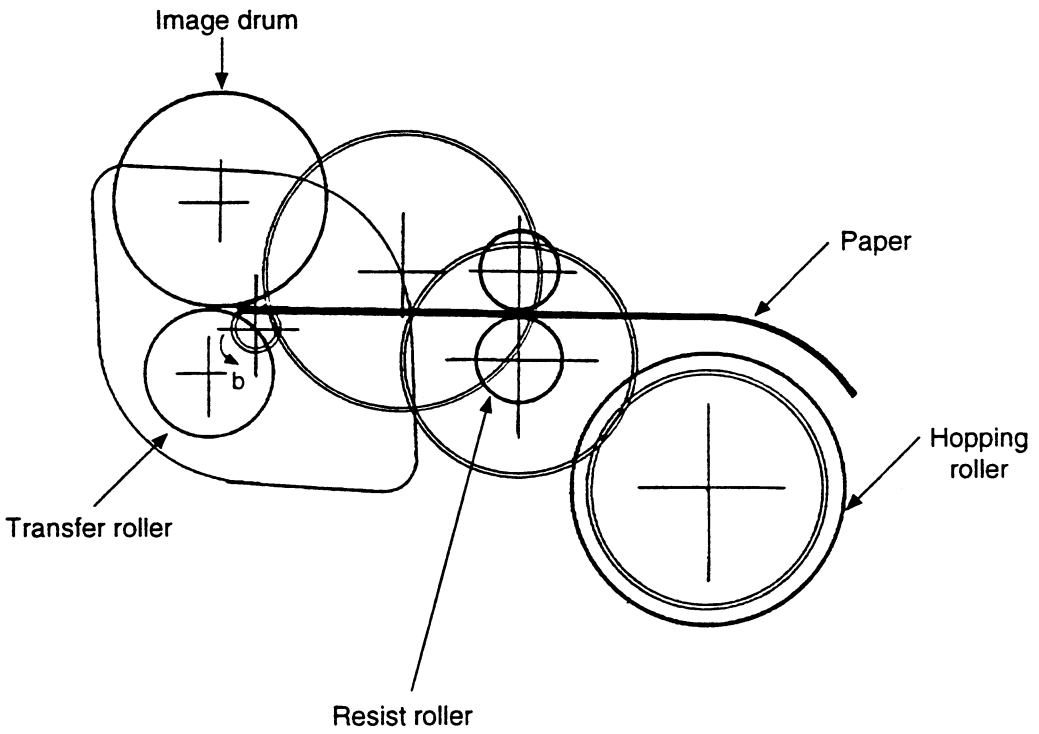
② After the paper has turned on the inlet sensor, the paper is further advanced by a predetermined length until the paper hits the resist roller. (The skew in the paper can thus be corrected.)



(b) Feeding

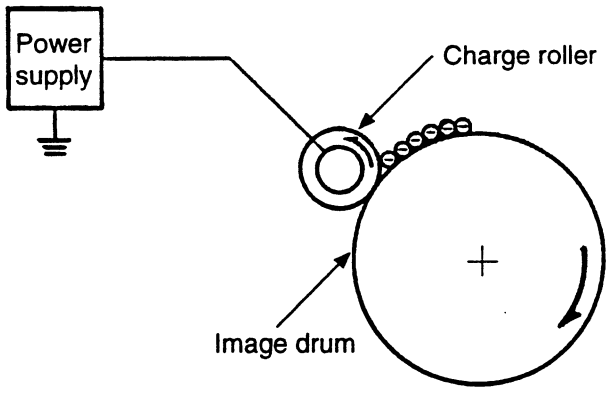
① After end of hopping, turning the resist motor in the "b" direction (in the CCW direction) drives the resist roller to advance the paper. (In this case, the hopping gear also turns, but the hopping roller is prevented from turning by the one-way bearing.)

② The paper is further advanced in synchronism with the print data.

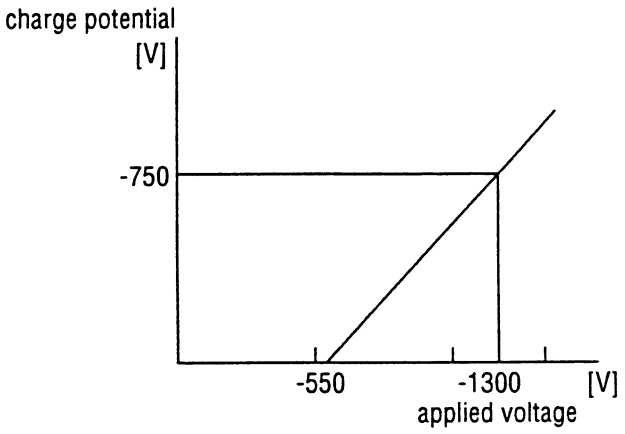


(2) Charging

Charging is effected by applying a DC voltage to the charge roller that is in contact with the image drum surface.

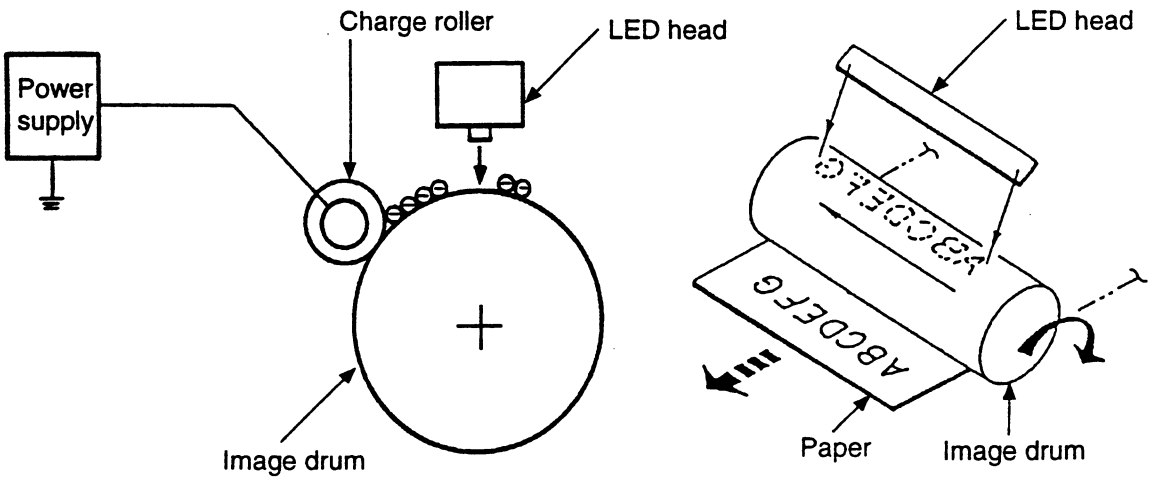


The charge roller is composed of two layers consisting of a conductive layer and a surface protective layer that have elasticity, in order to secure a good contact with the image drum. When the DC voltage applied from the power supply exceeds a threshold value, charging begins. The applied voltage is proportional to charge potential with off set of approx. -550V.

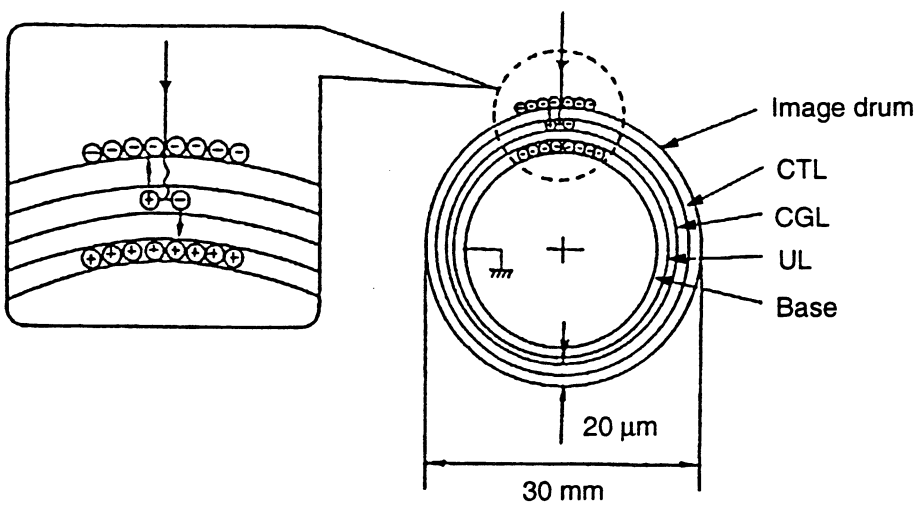


(3) Exposure

Light emitted from the LED head irradiates the image drum surface with negative charges. The surface potential of the irradiated part of the image drum drops, thereby forming an electrostatic latent image associated with the image signal.



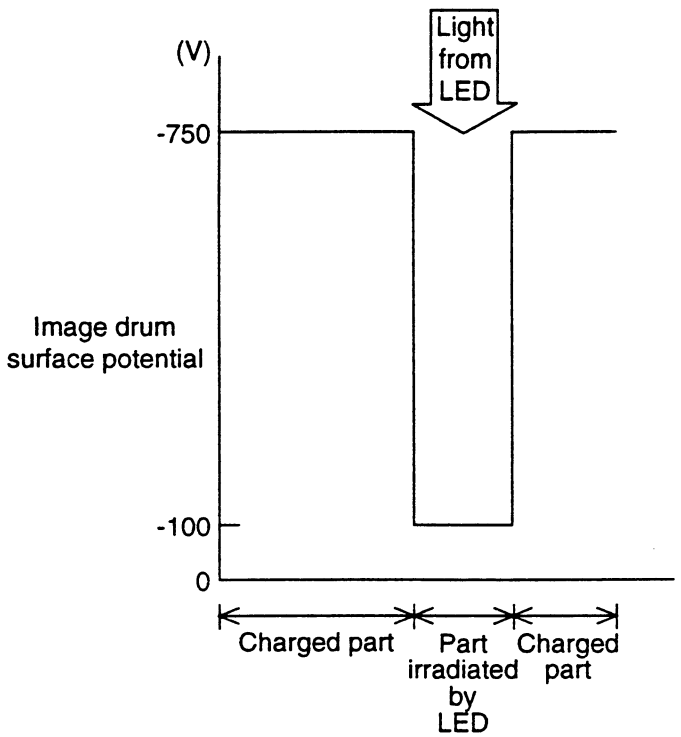
The unage drum is coated with an underlayer (UL), a carrier generation layer (CGL), and carrier transfer layer (CTL) on the aluminum base. The organic photo conductor layer (OPC), comprising a CTL and a CGL, is about 20 μm thick.



The image roller surface is charged to about - 750 V by the contact charge of the charge roller.

When light from the LED head irradiates the image drum surface, the light energy generates positive and negative carriers in the CGL. The positive carriers are moved to the CTL by an electrical field acting on the image drum. Likewise, the negative carriers flow into the aluminum layer (ground).

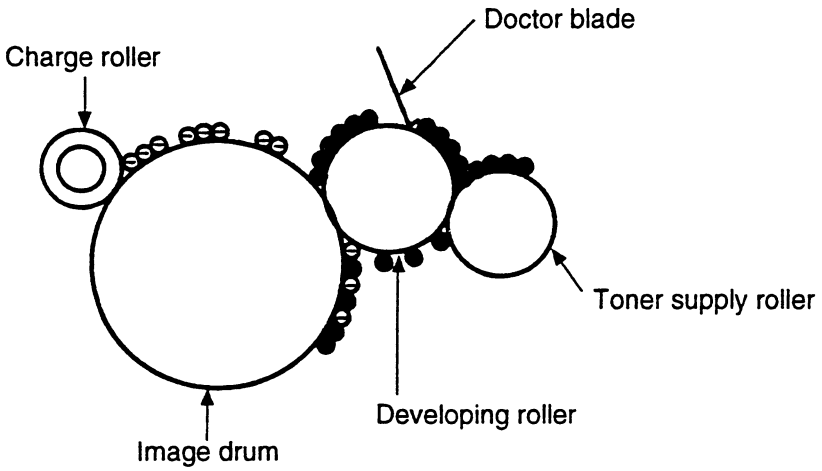
The positive carriers moved to the CTL combine with the negative charges on the image drum surface accumulated by the contact charge of the charge roller, lowering the potential on the image drum surface. The resultant drop in the potential of the irradiated part of the image drum surface forms an electrostatic latent image on it. The irradiated part of the image drum surface is kept at about -100 V.



(4) Developing

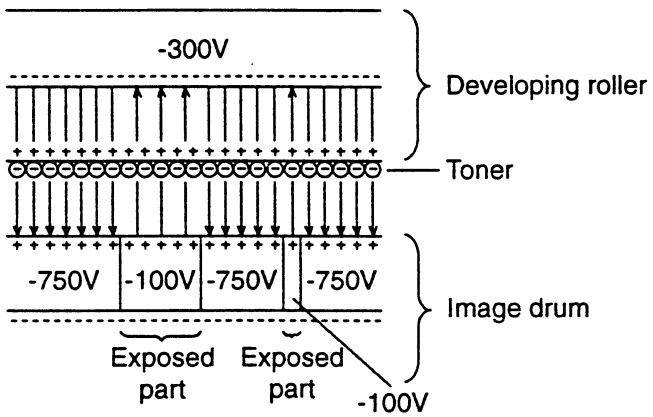
Toner is attracted to the electrostatic latent image on the image drum surface to convert it into a visible toner image. Developing takes place at the contact between the image drum and the developing roller.

① As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller. (The developing roller surface is charged positive and the toner, negative.)



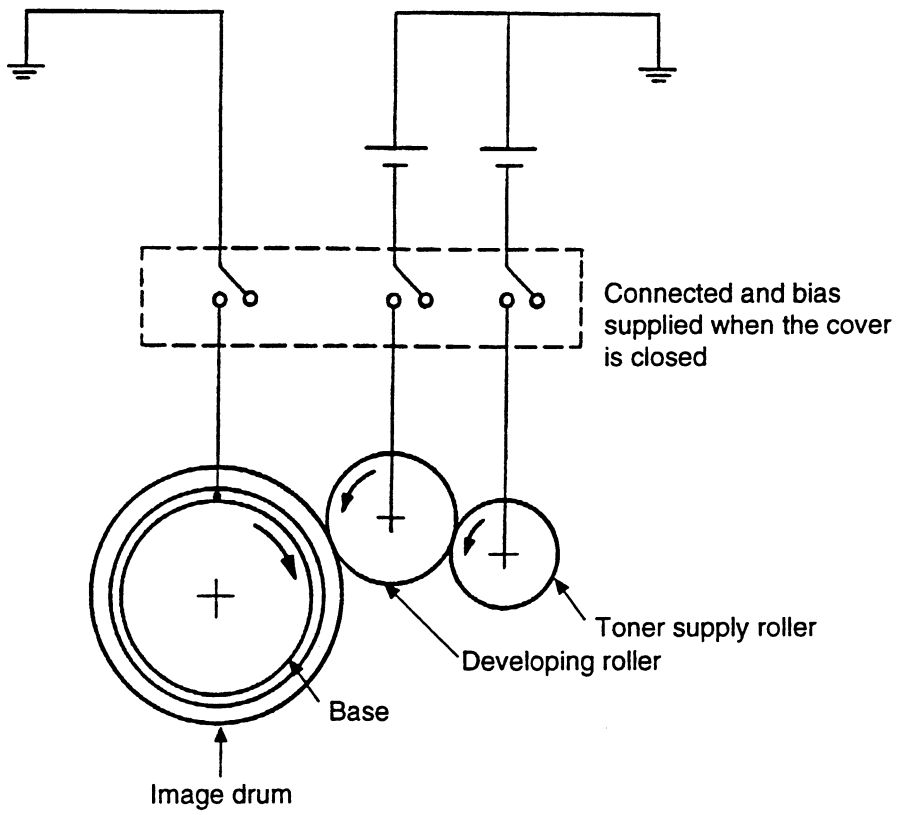
② The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

③ Toner is attracted to the exposed part (low-potential part) of the image drum at the contact between the image drum and the developing roller, making the electrostatic latent image visible.



Status of contact between the image drum surface and the developing roller
(Arrow marks denote the direction of the electric field.)

Note: The toner supply roller and the developing roller are supplied with bias voltages required during the developing process as shown below. - 450 VDC is supplied to the toner supply roller, - 300 VDC to the developing roller.

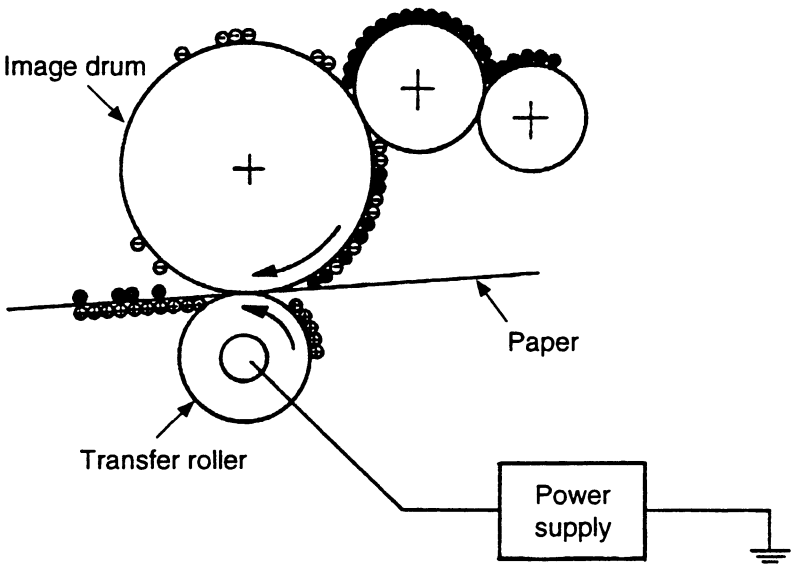


(5) Transfer

The transfer roller is composed of conductive sponge material and is designed to make the image drum surface and the paper closely into contact.

Paper is placed over the image drum surface, and a positive charge, opposite in polarity to the toner, is applied to the paper from its reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge induced to the transfer roller surface to be transferred to the paper at the contact between the transfer roller and the paper. As a results, toner charged negative that is attracted to the image drum surface is transferred to the upper side of the paper by the positive charge on the lower side of the paper.

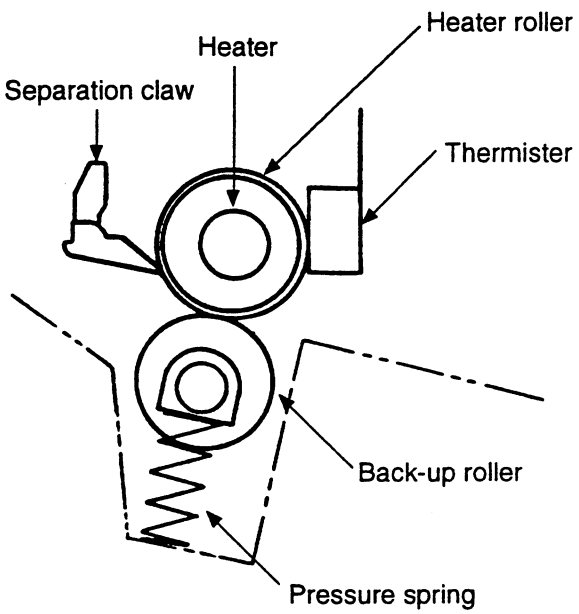


(6) Fusing

After the end of the transfer, the unfused toner image is fused on the paper under heat and pressure as it passes between the heater roller and the back-up roller. The heater roller with a Teflon coating incorporates a 400W heater (Halogen lamp), which heats the heat roller.

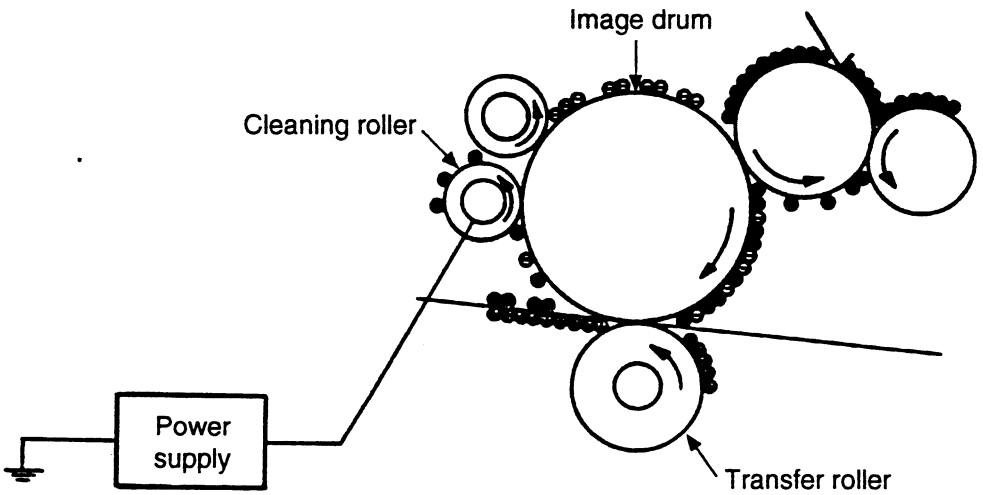
A thermister which is in contact with the heater roller regulates the heater roller at a predetermined temperature (about 155°C). A safety termostat cuts off voltage supply to the heater by opening the thermostat in the event of abnormal temperature rises.

The back-up roller is held under a pressure of 2.5 kg from the pressure spring at each side.



(7) Cleaning

After the end of the transfer, residual toner on the image drum is attracted to the cleaning roller temporarily by static electricity to clean the image drum surface.



(8) Cleaning of rollers

The charge roller, transfer roller and cleaning roller are cleaned in the following cases:

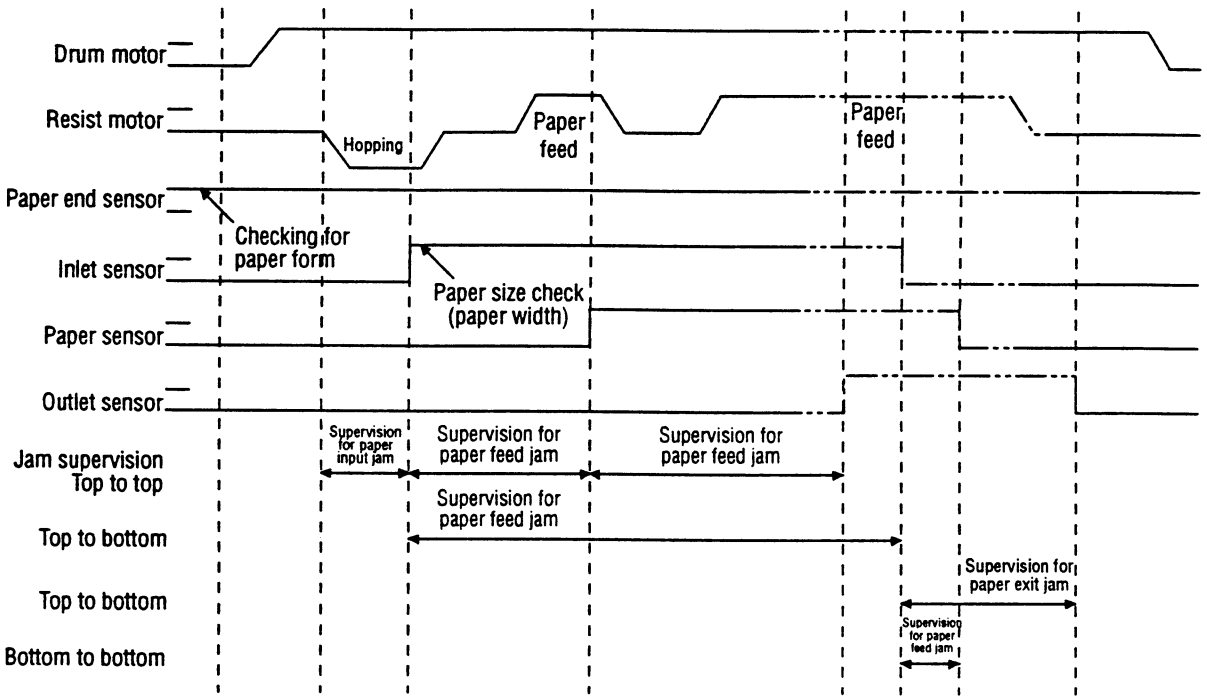
- In warming up at power-on time
- In warming up after the cover is opened and closed
- When the number of accumulated sheets is 10 or more and the printout operation ends

Changes in bias voltage applied to each roller move adhesive toner from the roller to the image drum and return it to the developer.

2.4 Paper Jam Detection

The paper jam detection function supervises the paper state at power-on time and during printing. In the event that the following state occurs, this function interrupts the printing process. If any of the following errors is presented, recovery printing will be performed by removing the jammed paper (namely by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	• At power-on time, the paper is placed at the inlet sensor. • After hopping operation is attempted three times, the leading part of the paper does not reach the inlet sensor.
Paper feed jam	• At power-on time, the paper is placed at the paper sensor. • The leading part of the paper does not reach the paper sensor within a predetermined distance after the paper has reached the inlet sensor. • The traiding part of the paper does not pass over the paper sensor within a predetermined distance after the traiding parts the paper has passed over the paper sensor. • The leading part of paper does not reach the cutlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	• At power-on time, the paper is placed on the outlet sensor. • The paper does not pass over the outlet sensor within a predetermined after the leading part of the paper has reached the outlet sensor. • The paper size check with the manual feed specified considers the reference size as free size.
Paper size error	• The size of the paper is supervised by the inlet sensors 1. It is detected that the paper does not pass over the inlet sensor 1 within predetermined range of distance. • The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by commandor menu. • The paper size check with the manual feed specified considers the reference size as free size.



Paper Feed Timing Chart

Paper Feed Check List

Type of error	Supervision	Standard value	Error	
			Plus	Minus
Paper feed error	Hopping start to In sensor on	72.0	36.0	-
Paper feed jam	In sensor on to Write sensor on	20.0	20.0	-
Paper feed jam	Write sensor on to Out sensor on	138.0	69.0	-
Paper size error	In sensor on to In sensor off	Depending on the paper length.	45.0	45.0
Paper exit jam	Out sensor on to Out sensor off	Depending on the paper length.	45.0	45.0
Paper feed jam	In sensor off to Write sensor off	22.0	22.0	-

Unit : mm

Note: Hyphen "-" in the table indicates "no check is done."

Paper Length List

Type	Paper length	Check range	
		Min.	Max.
A4	297.0	252.0	342.0
A5	210.0	165.0	255.0
B5	257.0	212.0	302.0
LETTER	279.4	234.4	324.4
LEGAL 13	330.2	285.2	400.6
LEGAL 14	355.6	285.2	400.6
EXEC	266.7	221.7	311.7
A6	148.0	103.0	193.0
Monarch	190.5	145.5	235.5
COM-10	241.3	196.3	286.3
DL	220.0	175.0	265.0
C5	229.0	184.0	274.0
Free	148.0 ~ 355.6	103.0	400.6

Unit : mm

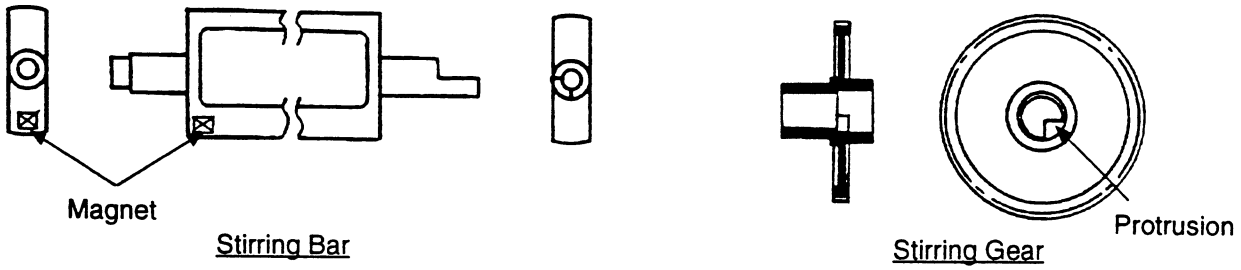
2.5 Cover Open

When the stacker cover is opened, the cover open microswitch on the power/sensor board is turned off to cut the supply of +30V to the high voltage power supply circuit. As a result, all high-voltage outputs are interrupted. At the same time, the CVOPN signal is sent to the control board to notify it of the off state of the microswitch, and the control board performs the cover open processing.

2.6 Toner Low Detection

- Composition

The device consists of the stirring gear which rotates at a constant rate, the stirring bar and the magnet on the stirring bar. The stirring bar rotates through the link on the protrusion in the stirring gear.

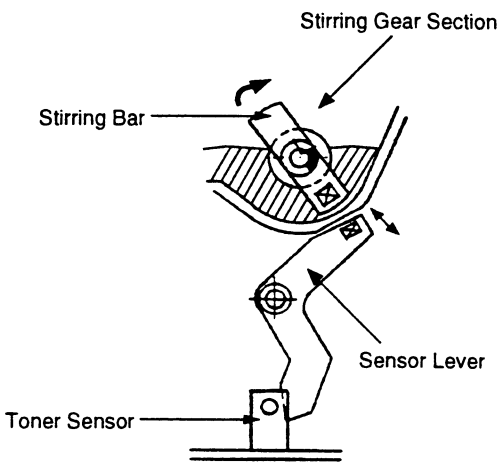


- Operation

Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

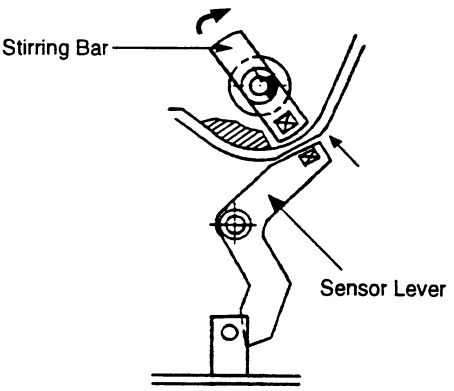
Operation during toner full state

- The stirring bar rotates due to the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, since the other side is being dipped in the toner, the stirring bar is pushed by the stirring gear.

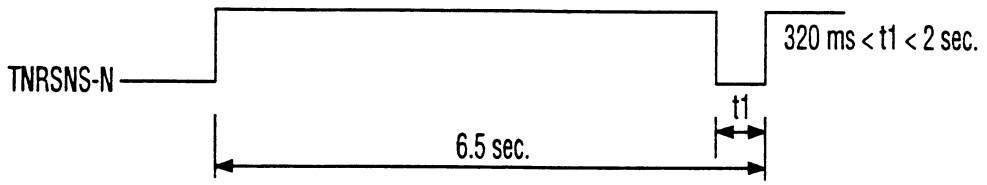


Operation during toner low state

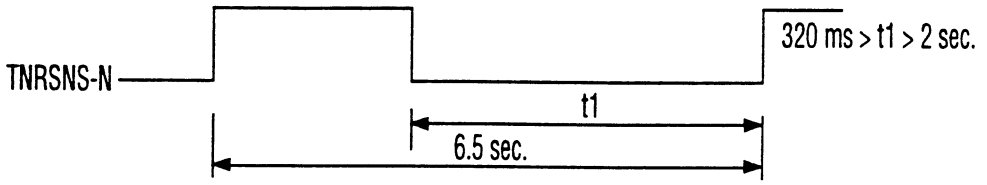
- When the stirring bar reaches the maximum height, since there is no resistance provided by the toner on the other side, it falls to the minimum height due to its own weight. Because of this, the time interval during which it is in encounter with the magnet of the sensor lever becomes long. By monitoring this time interval, toner low can be detected.



TONER FULL state



TONER LOW state



- When the toner low state is detected 2 times consecutively, Toner Low is established.
- When the toner full state is detected 2 times consecutively, Toner Low is cancelled.
- When there is no change with the toner sensor for 2 cycles (6.5 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the drum motor is in halt.

3. PARTS REPLACEMENT

3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemplies, and units in the field. Only the removal procedures are explained here. Reverse the procedure for the installation.

3.1 Precautions for Parts Replacement

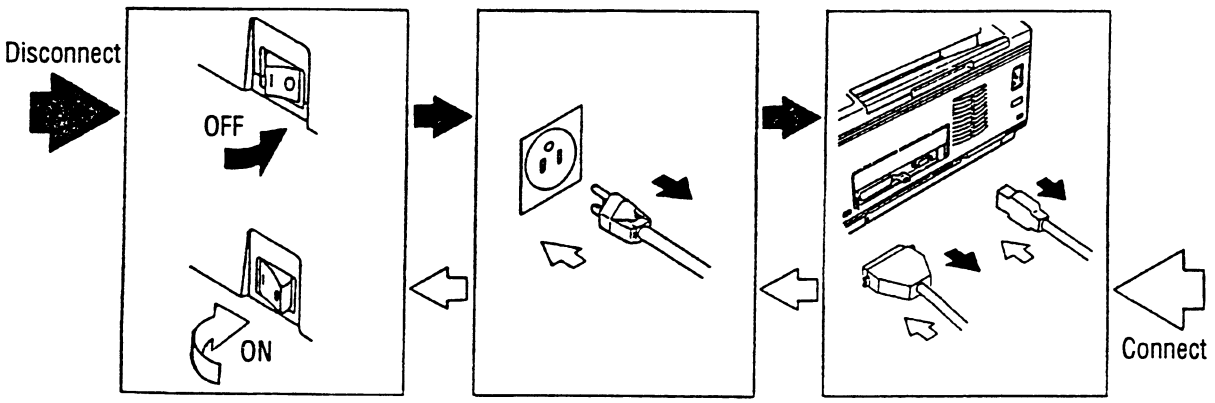
(1) Before starting parts replacement, remove the AC cable and interface cable.

(a) Remove the AC cable in the following procedure:

i) Turn off ("o") the power switch of the printer
ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.
iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cable and interface cable to the printer.
ii) Connect the AC inlet plug to the AC receptacle.
iii) Turn on ("I") the power switch of the printer.



(2) Do not try disassembly as long as the printer is operating normally.

(3) Do not remove unnecessary parts: try to keep disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the determined sequence. Otherwise, parts may be damaged.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the orginal positions.

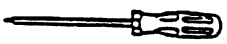
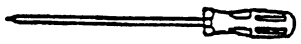
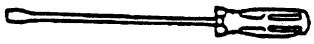
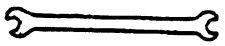
(7) When handling ICs such as microprocessors, ROM and RAM, and circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for field replacement of printed circuit boards and units.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		5.0 mm wrench	1		
8		Handy cleaner	1		
9		LED Head cleaner	1	Cleans LED head	

3.2 Parts Layout

This section explains the layout of main parts of the equipment.

[Lower base unit]

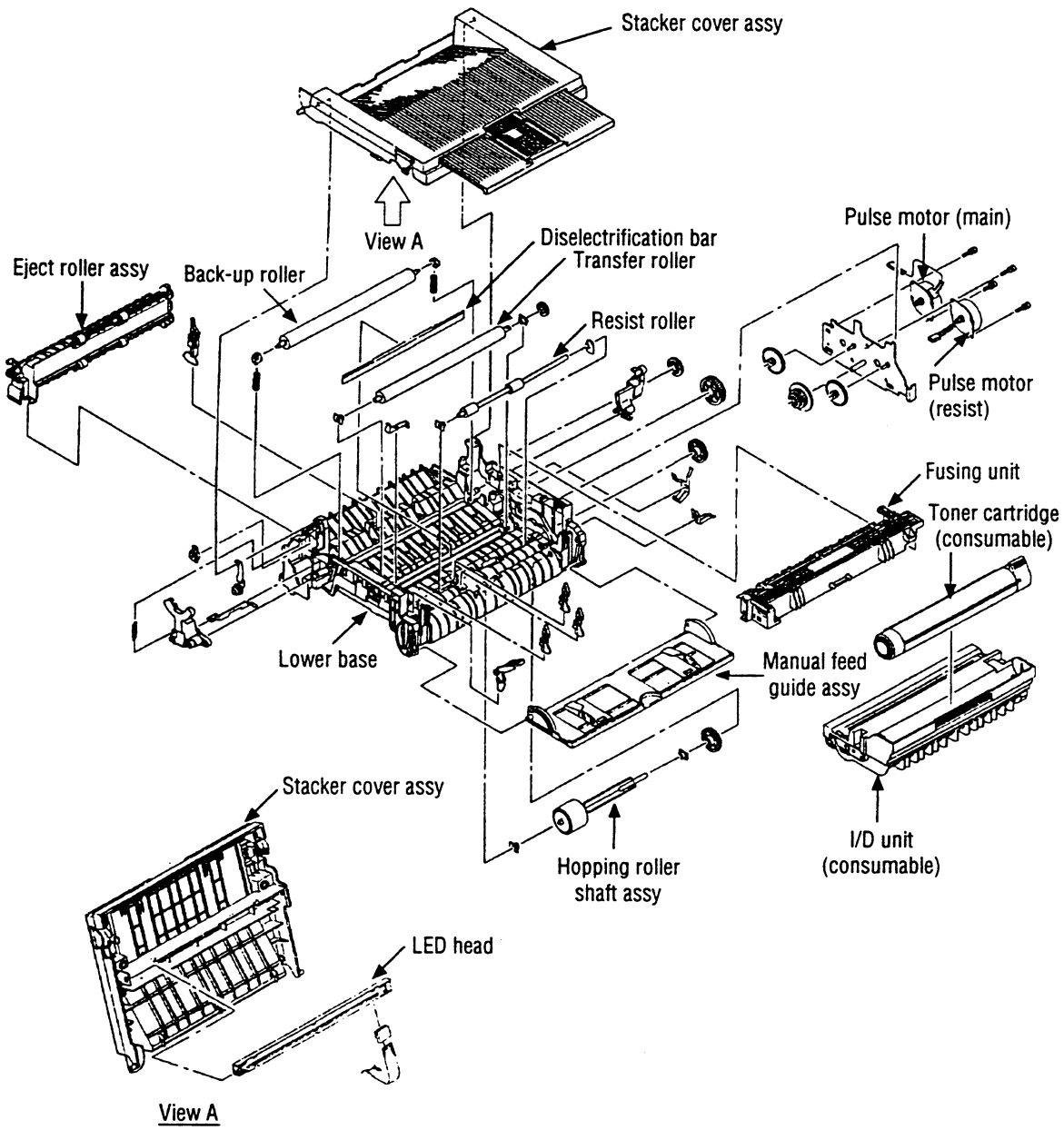


Figure 3-1

[Upper cover unit]

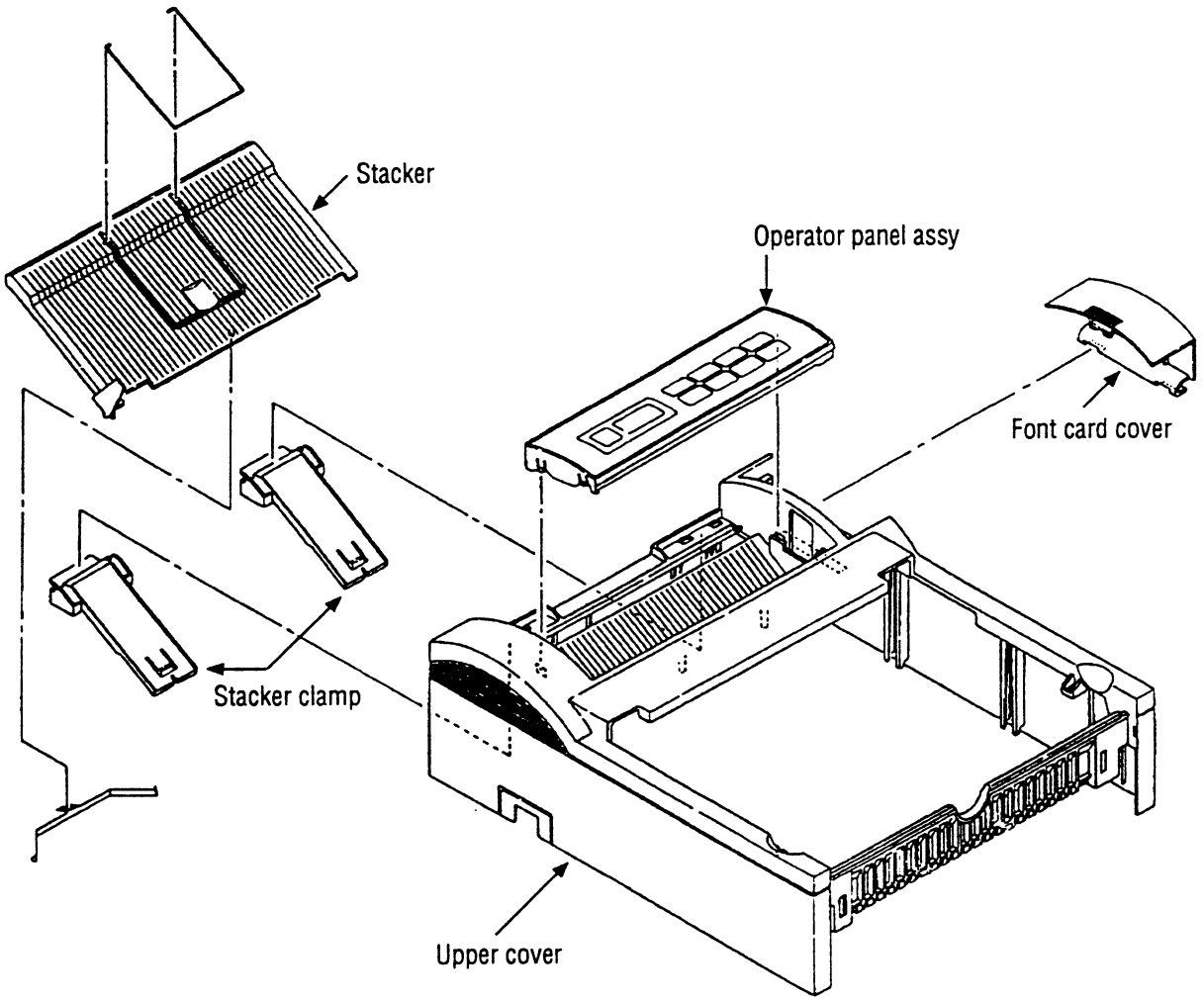


Figure 3-2

[Base unit]

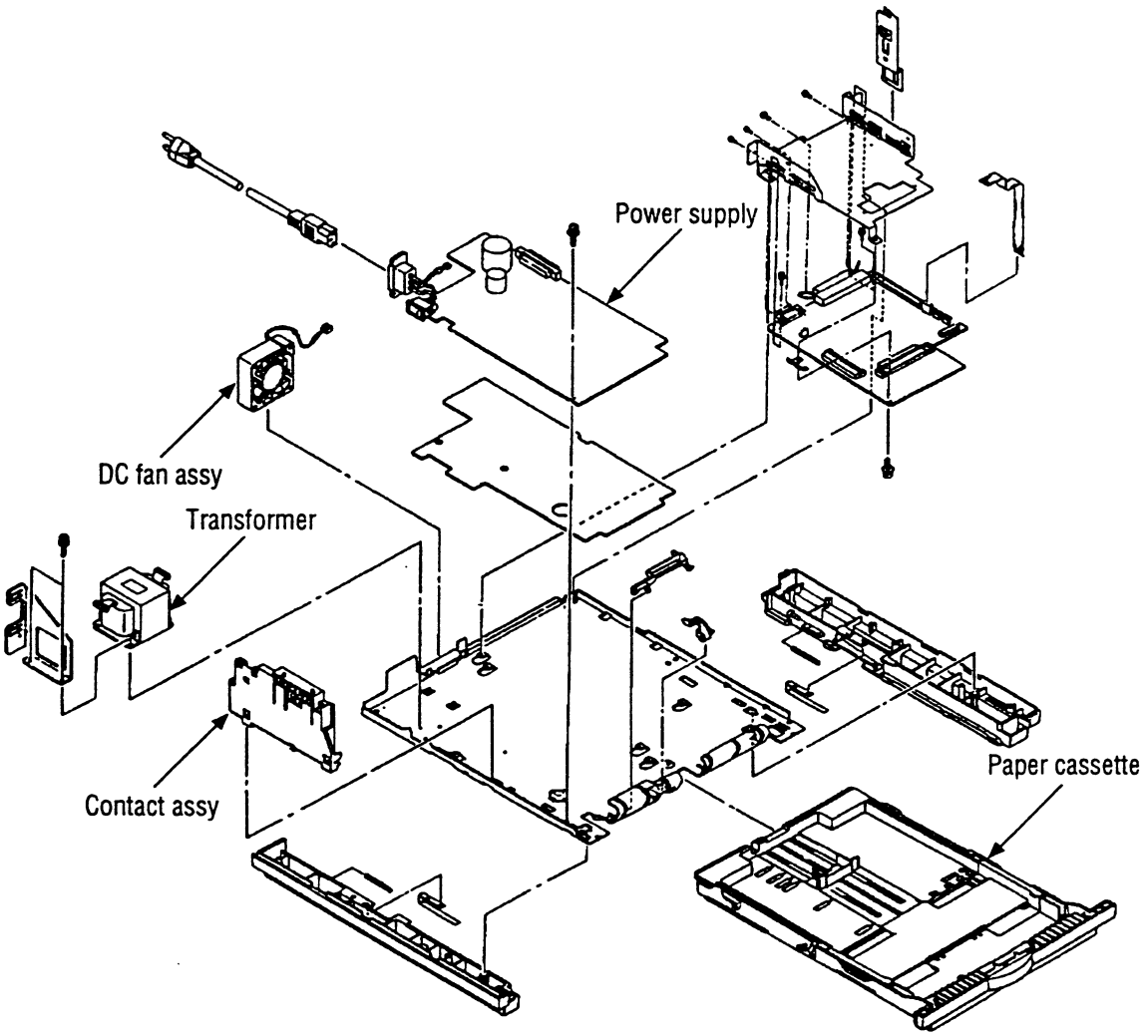
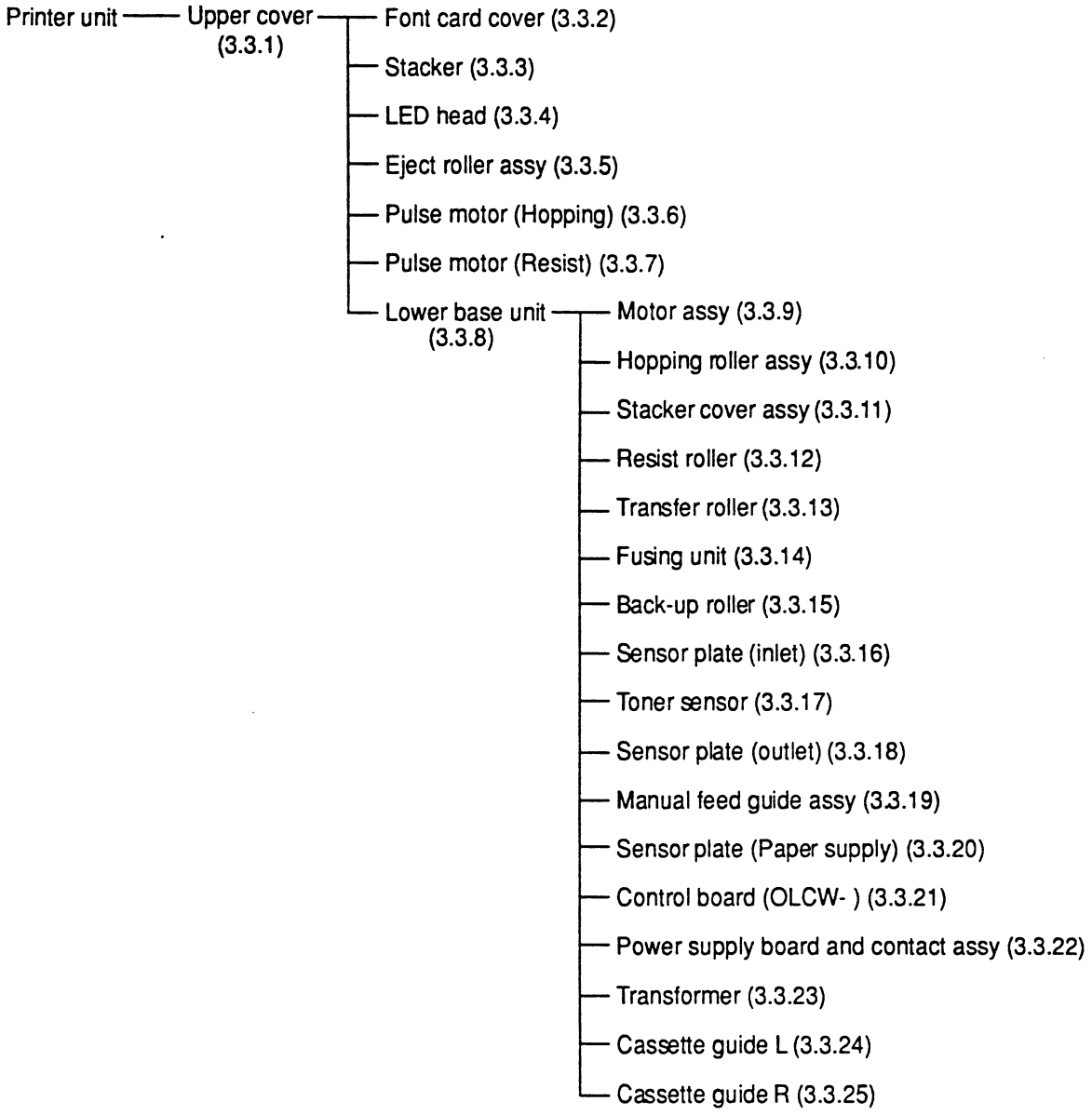


Figure 3-3

3.3 How to Change Parts

This section explains how to change parts and assemblies appearing in the disassembly diagram below.



3.3.1 Upper Cover

(1) With the power switch turned off, unplug the AC power cord from outlet.

(2) Disconnect the interface cable ①.

(3) Open the font card cover ②, and remove the font card (option) ③.

(4) Lift the left side of the operator panel assy ④ and remove it.

(5) Disconnect the connecting cable ⑤ from the connector (CN1) ⑦ of the operator panel PCB (OLLD) ⑥, and put the cable into the cover.

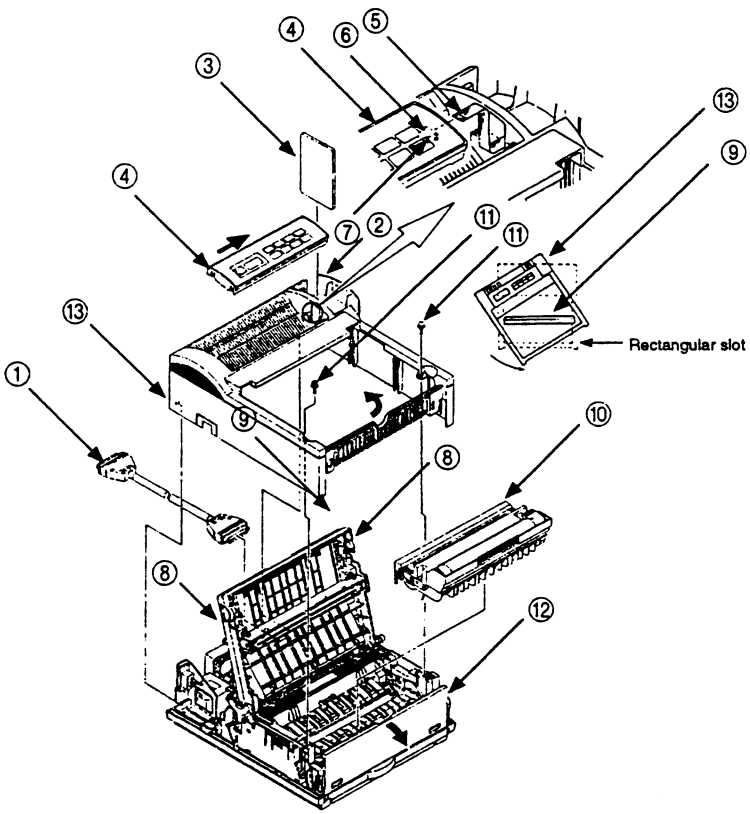
(6) Open the stacker cover ⑨ by pressing the knobs ⑧ on the left and right side.

(7) Remove the I/D unit ⑩.

(8) Remove two screws ⑪, and open the manual feed guide ⑫. Lift up this side of the upper cover ⑬ and release claws on two places on the back side. Set the stacker cover ⑨ on the diagonal line of the square holes of the upper cover and lift up the upper cover ⑬ lightly, then remove it.

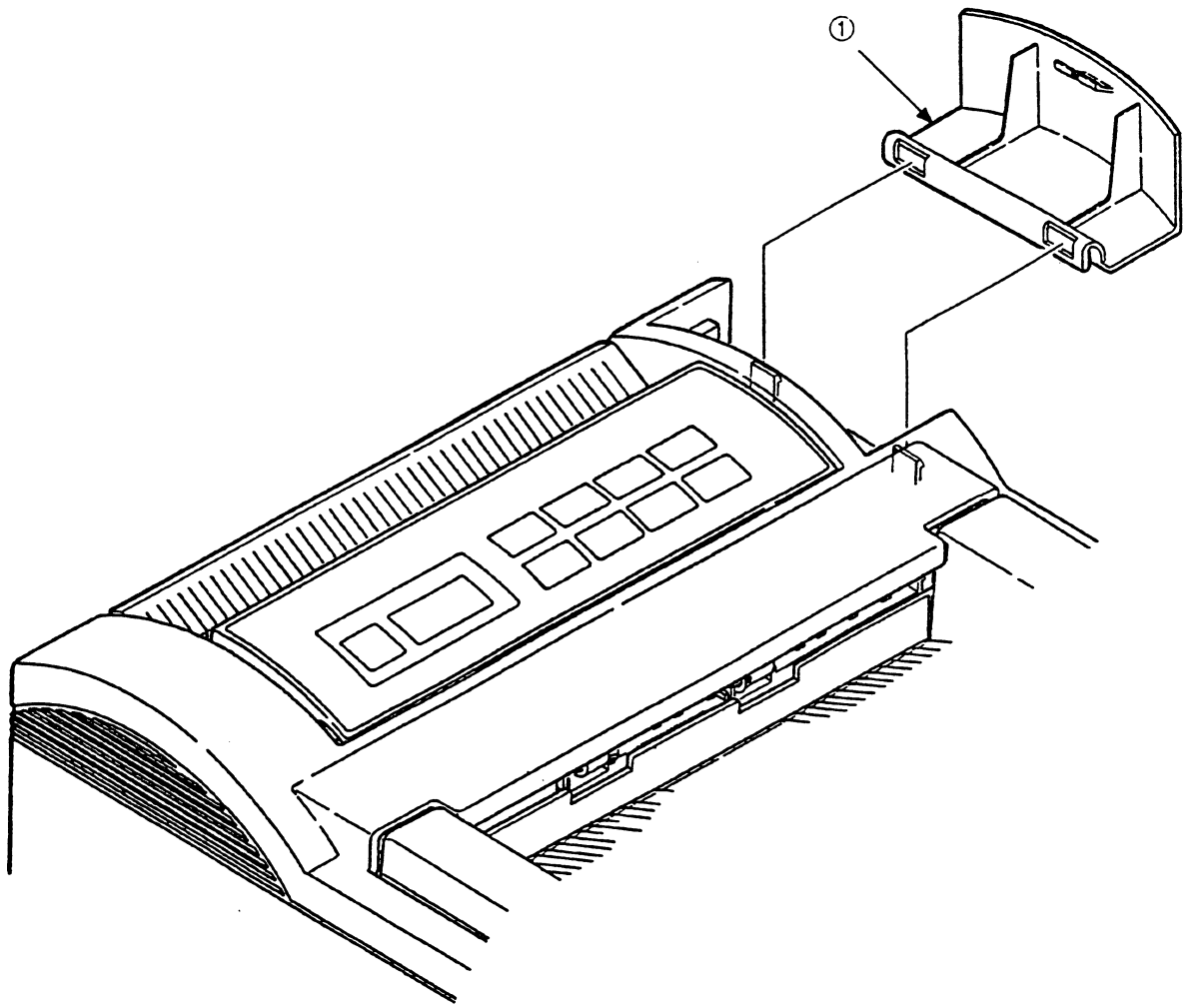
Notes: 1) When removing or installing the upper cover, use care so as not to damage the cable ⑤.

2) When exchanging the upper cover ⑬ of the printers with a serial number up to and including S/N 303Axxxxx, exchange the eject roller assy at the same time. For the printers with a serial number S/N 304Axxxxx onward, exchange only the upper cover ⑬.


⑬ Upper cover
⑨ Stacker cover (When removing the upper cover, match the stacker cover to the rectangular slot of the upper cover diagonally, and then lift.)
Rectangular slot

3.3.2 Font card cover

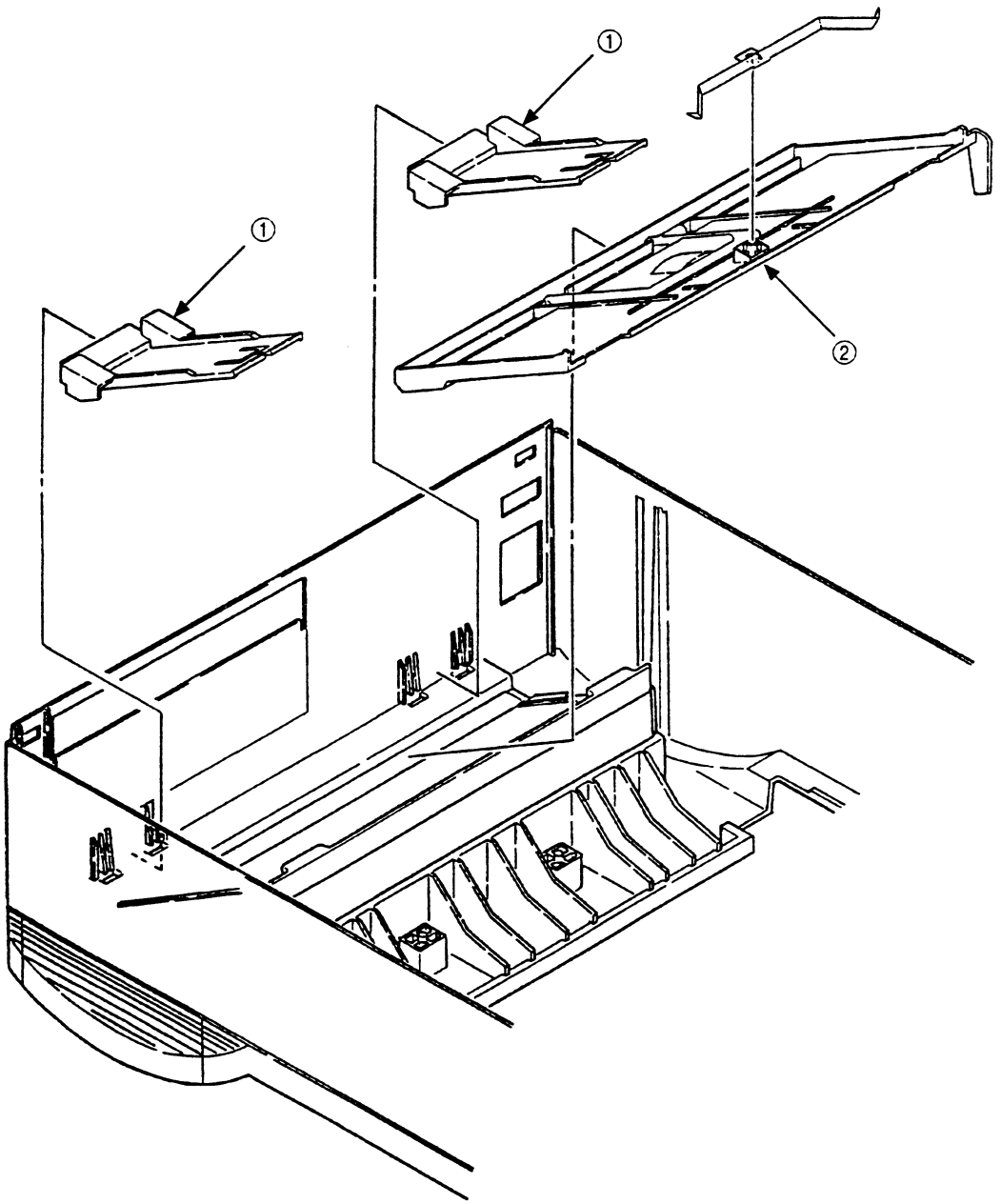
(1) Open the font card cover ① and remove it.



3.3.3 Stacker

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the two stackers clamp ① and the stacker ② by bending the upper cover.



3.3.4 LED head

(1) Remove the upper cover. (See 3.3.1)

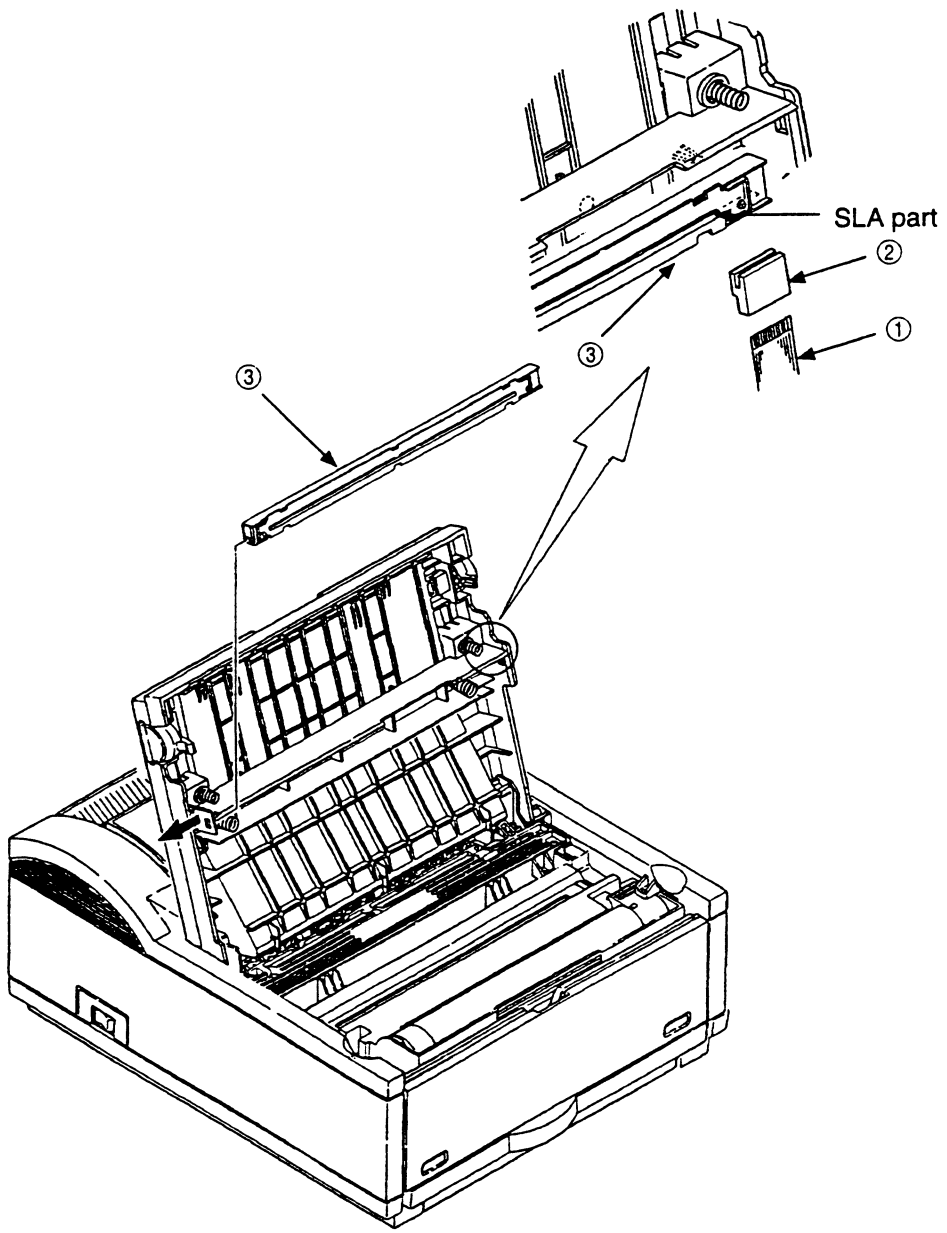
(2) Remove LED cable ① and PC connector ② from LED head ③.

(3) Lay down the hook section on the left side of the stacker cover and remove LED head ③.

Note: • Be sure not to touch directly or push SLA part of LED head.

• After mounting new LED head, set drive time of LED head following the indication of LED head. (See 4.2.1)

• For the installation of LED cable ①, install PC connector ② at LED cable ①, then connect LED head ③ to the cable.

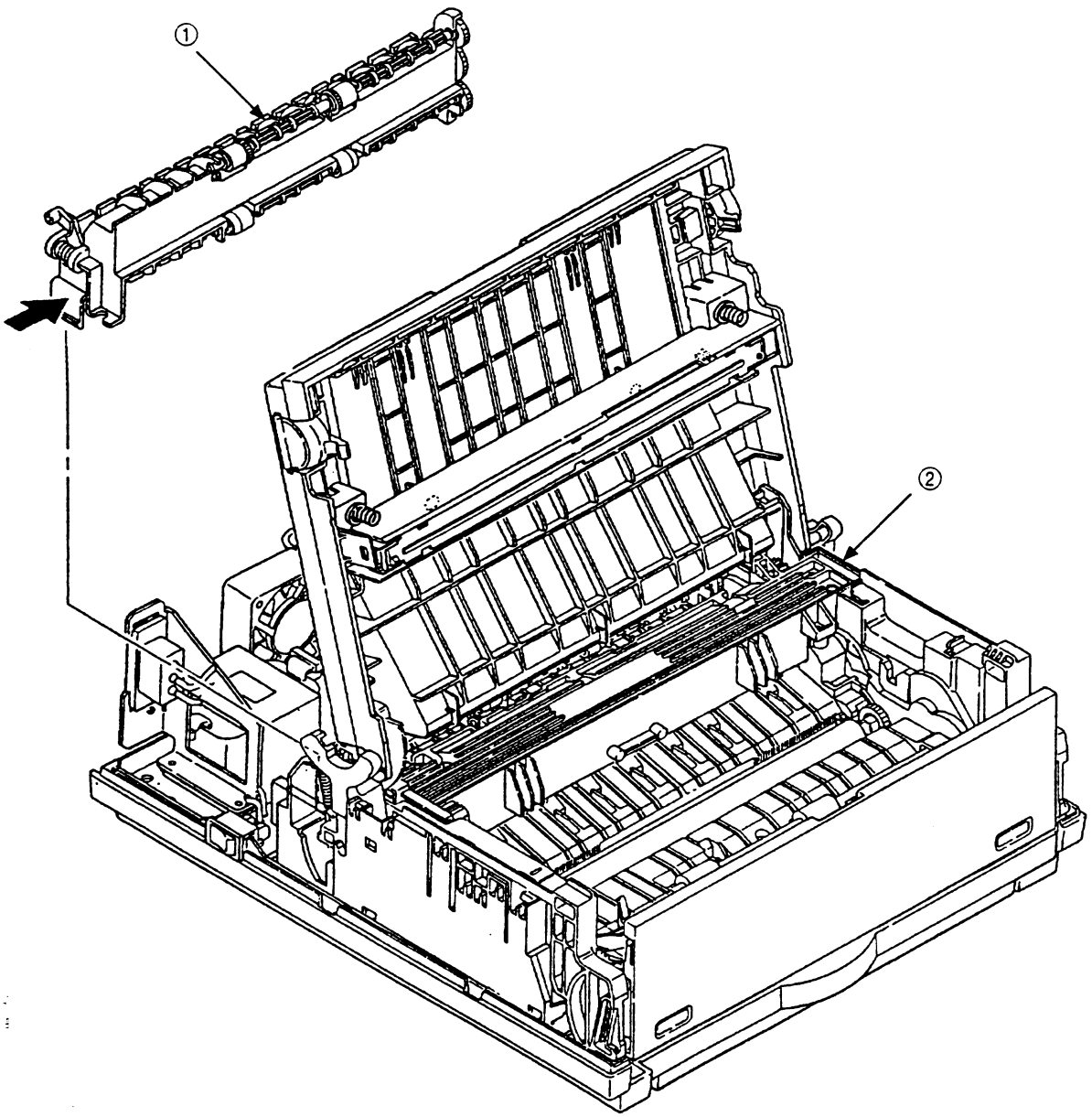


3.3.5 Eject roller assy

(1) Remove the upper cover. (See 3.3.1)

(2) Press the clamp on the left side of the eject roller assy ① in the direction shown by arrow. Then detach the eject roller assy from the lower base unit ② and remove it.

Note: When mounting the eject roller, confirm that engagement with the main unit is proper.

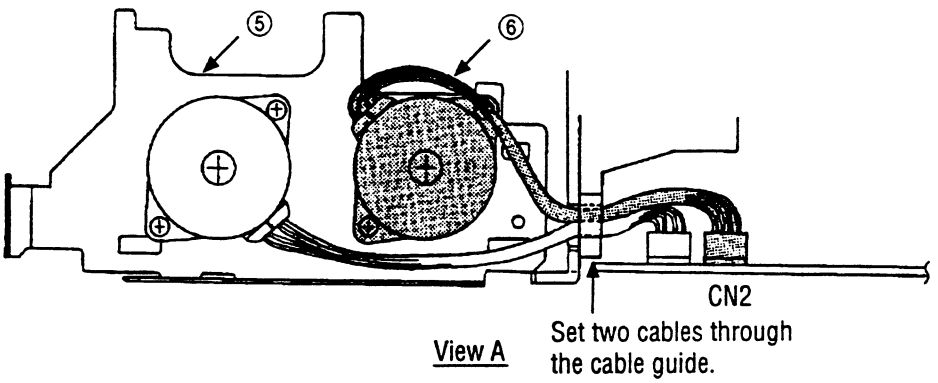


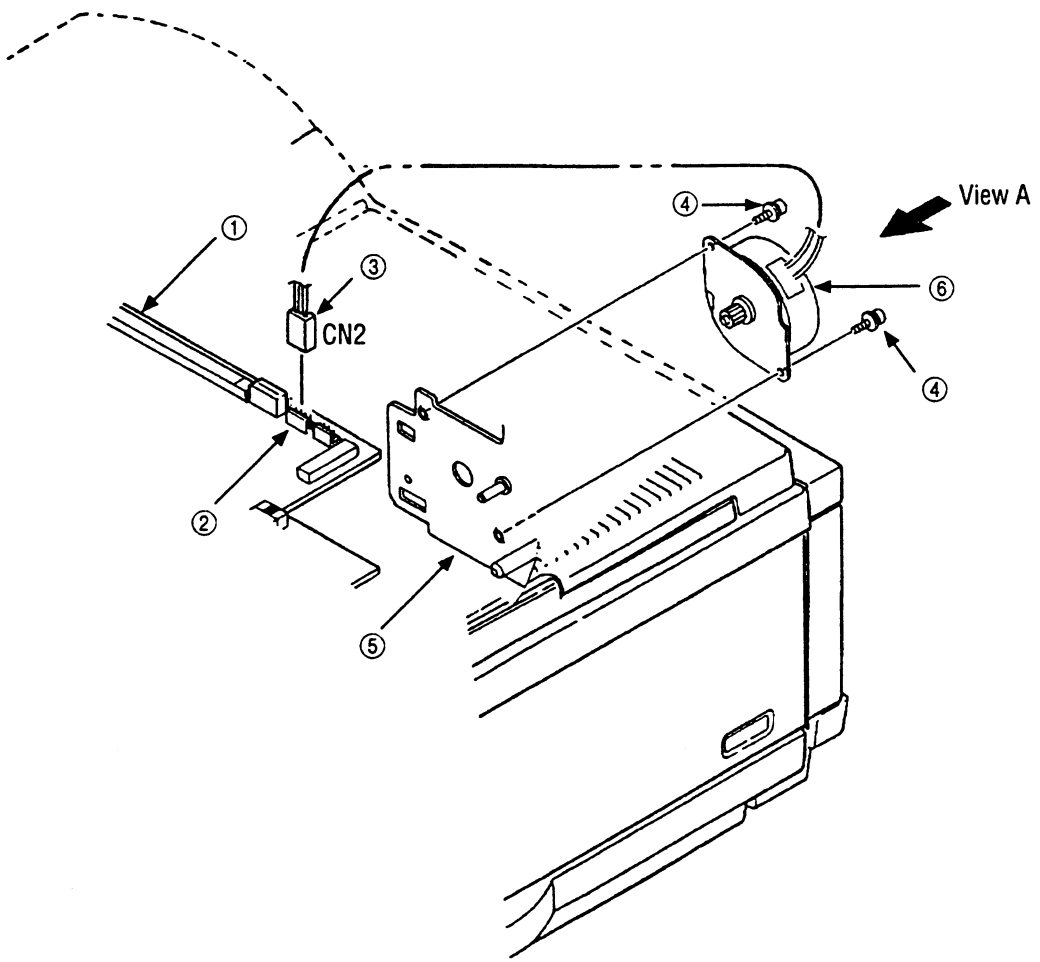
3.3.6 Pulse motor (Main)

(1) Remove the upper cover. (See 3.3.1)

(2) Remove connector ③ from connector (CN2) ② of the control board (OLCW-) ①.

(3) Remove two screws ④ and remove the pulse motor (main) ⑥ from the motor bracket ⑤.



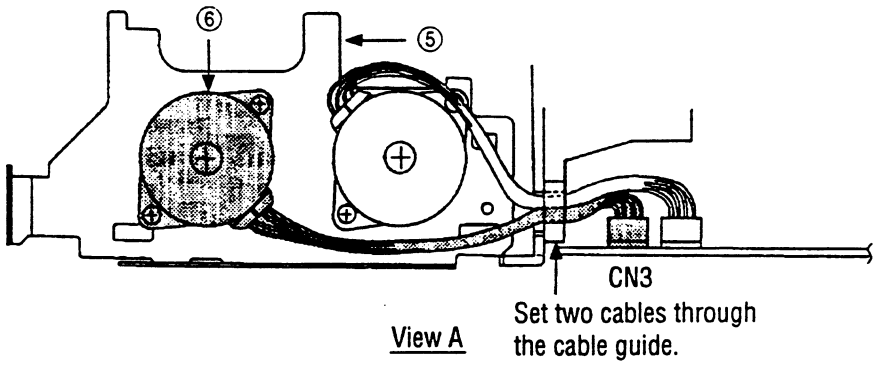


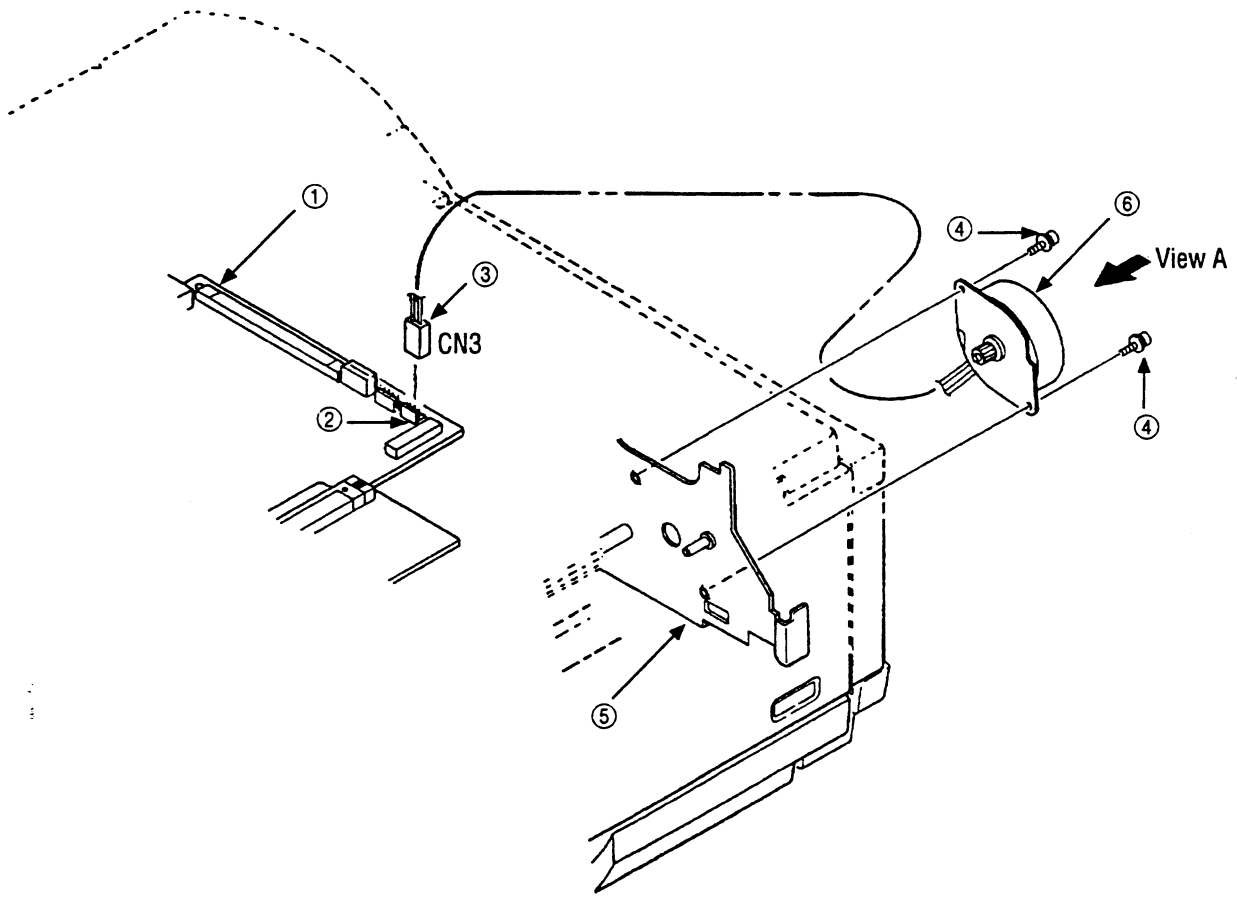
3.3.7 Pulse motor (Resist)

(1) Remove the upper cover. (See 3.3.1)

(2) Remove connector ③ from connector (CN3) ② of the control board (OLCW-) ①.

(3) Remove two screws ④ and remove the pluse motor (resist) ⑥ from the motor bracket ⑤.





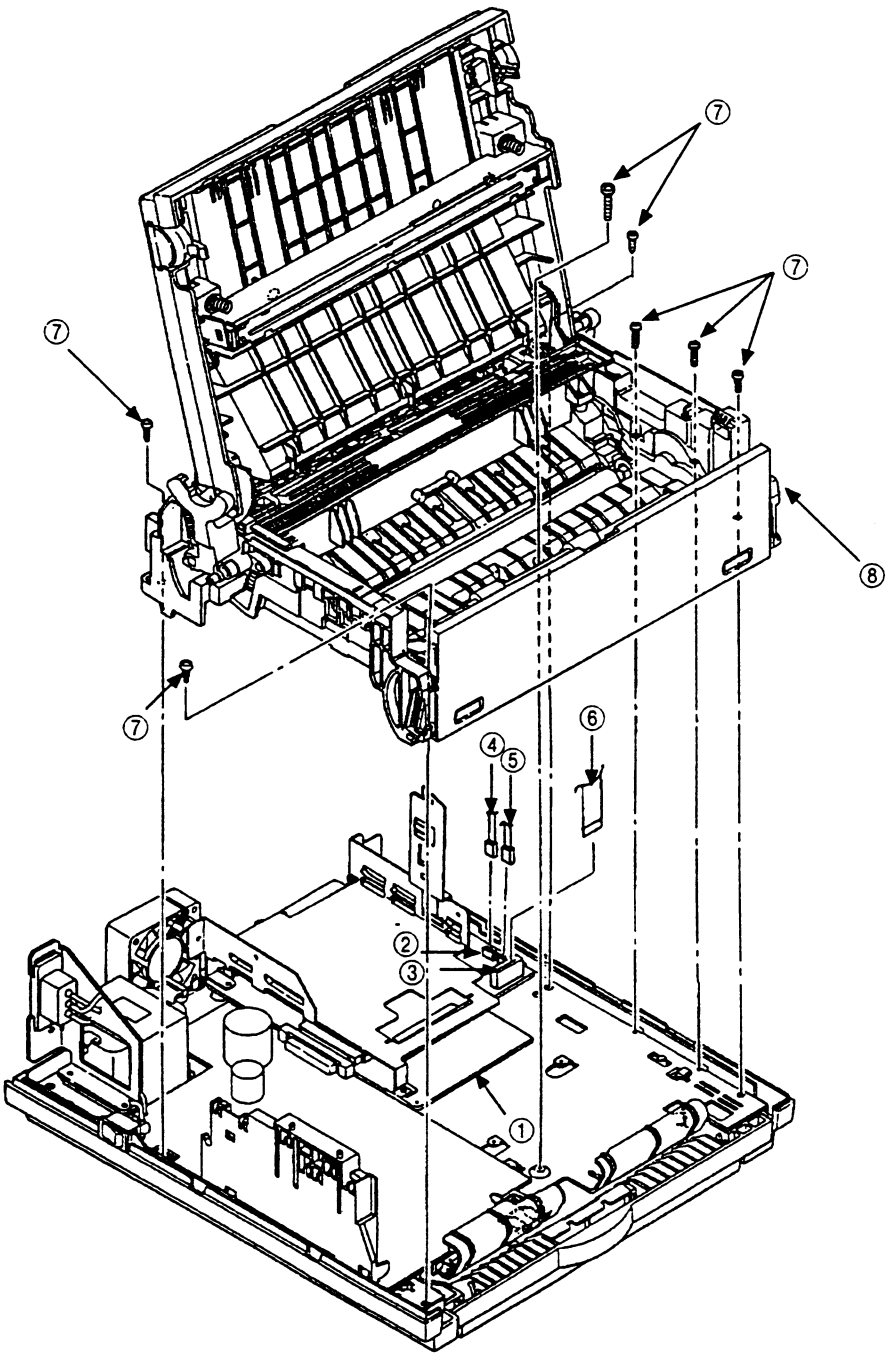
3.3.8 Lower base unit

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the connecting cables ④ ⑤ of the pulse motor from the connectors ②, ③ of the control board (OLCW-) ①.

(3) Remove the connector ⑥ of the LED head.

(4) Remove seven screws ⑦, then remove the lower base unit ⑧.

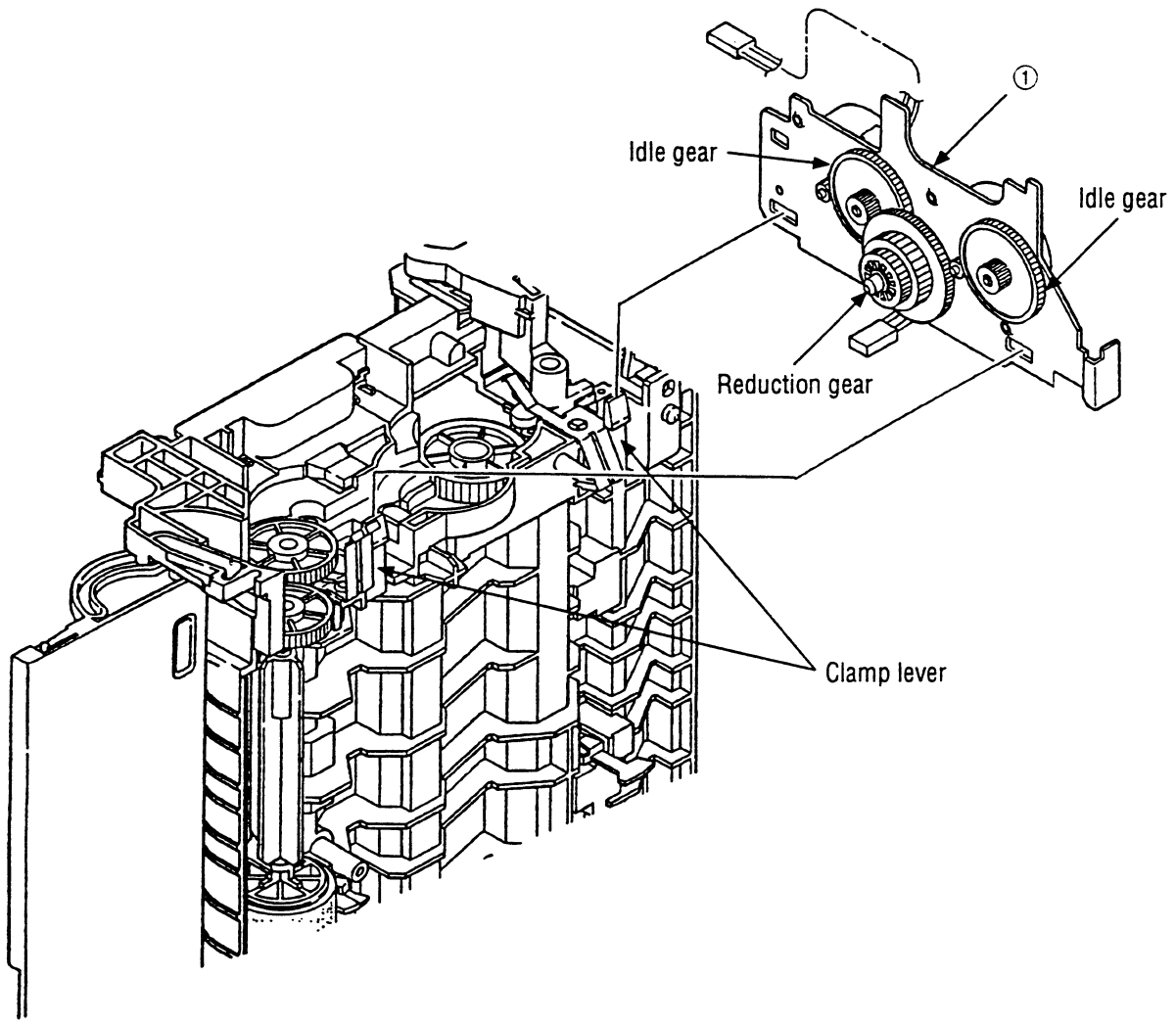


3.3.9 Motor assy

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Stand the lower base unit on edge as shown and unlock two clamp levers, then remove the motor assy ①.



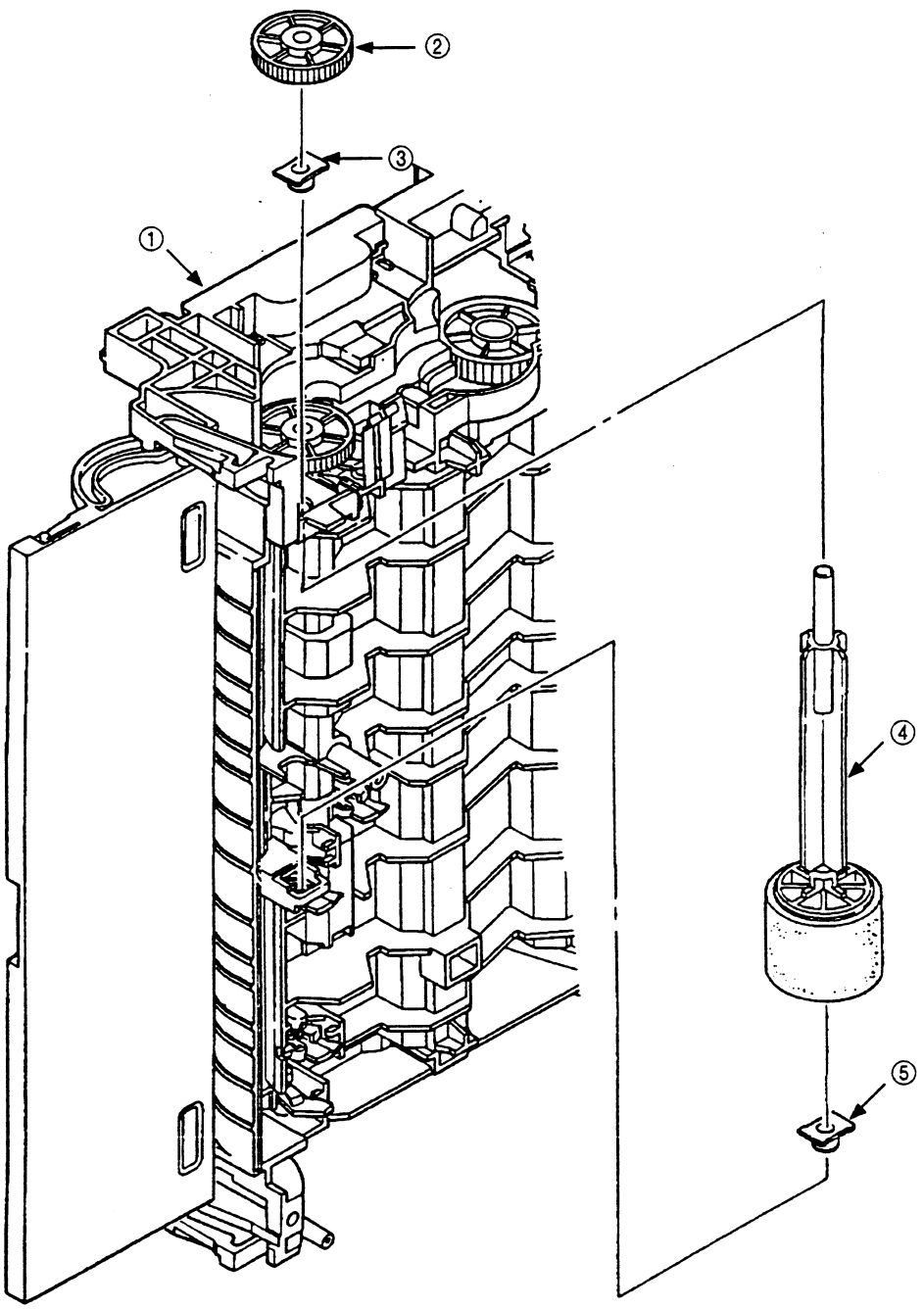
3.3.10 Hopping roller assy

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Remove the motor assy. (See 3.3.9)

(4) With the lower base unit ① standing, remove the one-way clutch gear ② and the bearing A ③, then remove the hopping roller assy ④ and the bearing B ⑤.



3.3.11 Stacker cover assy

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the motor assy. (See 3.3.9)

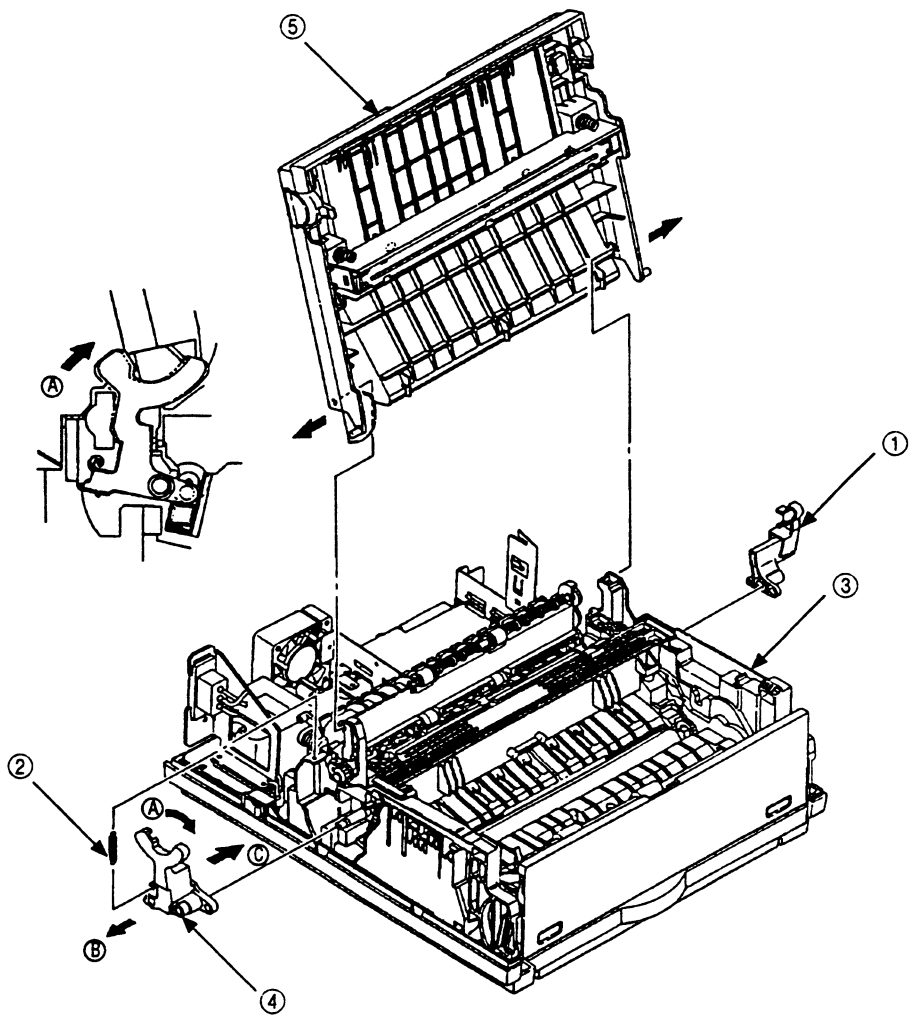
(3) Remove the reset lever R ①.

(4) Detach the reset spring ② from the lower base unit ③, turn the reset level L ④ in the direction of the arrow Ⓐ until it is stopped, and remove it in the direction of the arrowⒷ.

(5) Release two claws of the lower base unit ③, then remove the stacker cover assy ⑤.

Note: The reset lever L and R are different for the printers with serial numbers up to and including S/N 303Axxxxx and those with S/N 304Axxxxx and thereafter. When exchanging the reset lever L or R, be sure to use the ones suitable for the serial number of the printer.

Parts name	Use for Product	
	S/N 303Axxxxx up to and including	S/N 304Axxxxx and thereafter
Reset lever L	P/N 3PK4083-6810P1	P/N 3PP4083-6053P1
Reset lever R	P/N 3PK4083-6811P1	P/N 3PP4083-6054P1



3.3.12 Resist roller

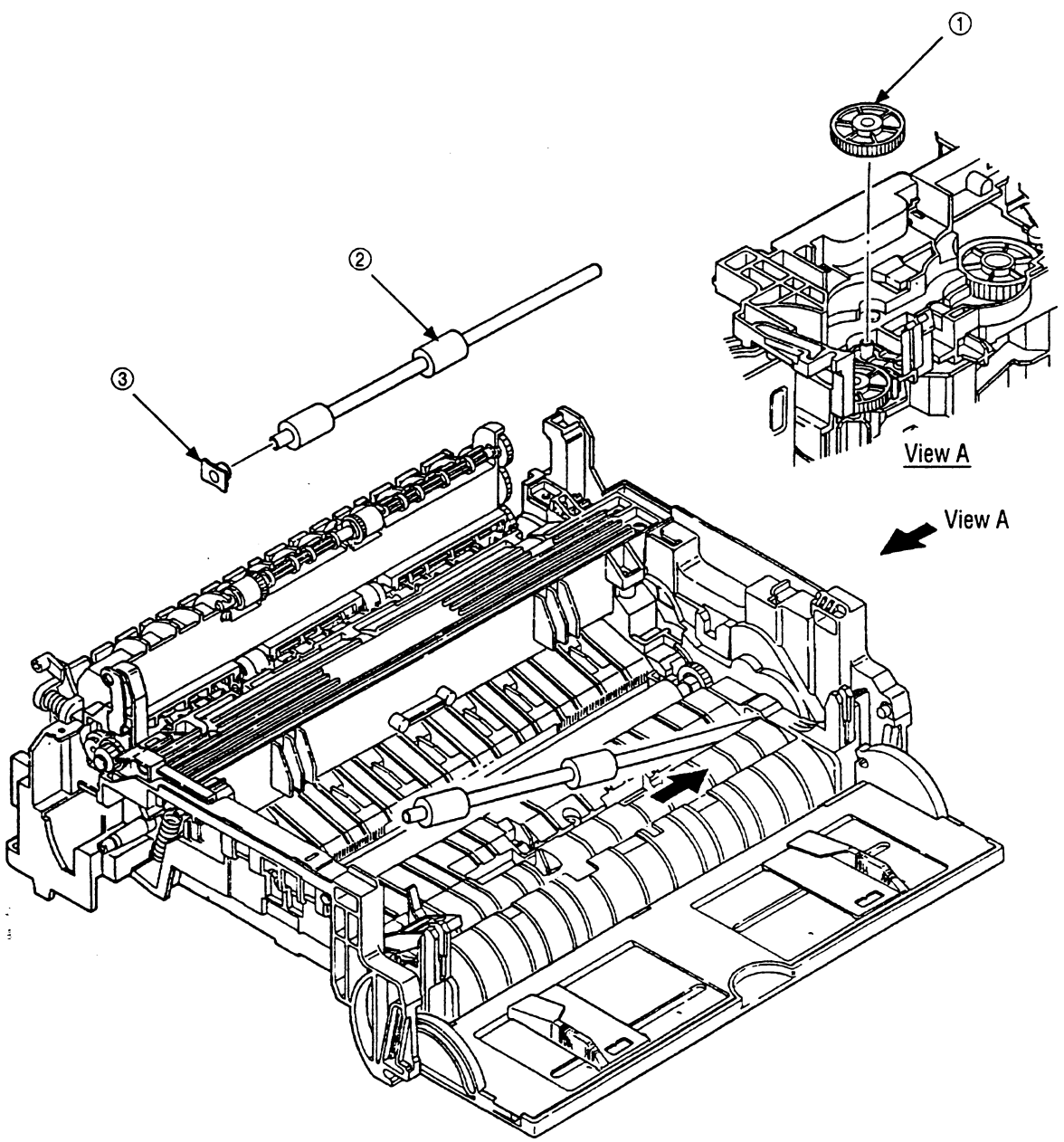
(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Remove the motor assy. (See 3.3.9)

(4) With the lower base unit standing, remove the one-way clutch gear ①.

(5) Press the resist roller ② to the right side (to the direction shown by arrow) and lift up the left side of it, then remove the resist roller ② and the bearing (resist) ③.



3.3.13 Transfer roller

(1) With the power switch turned off, unplug the AC power cord from the outlet.

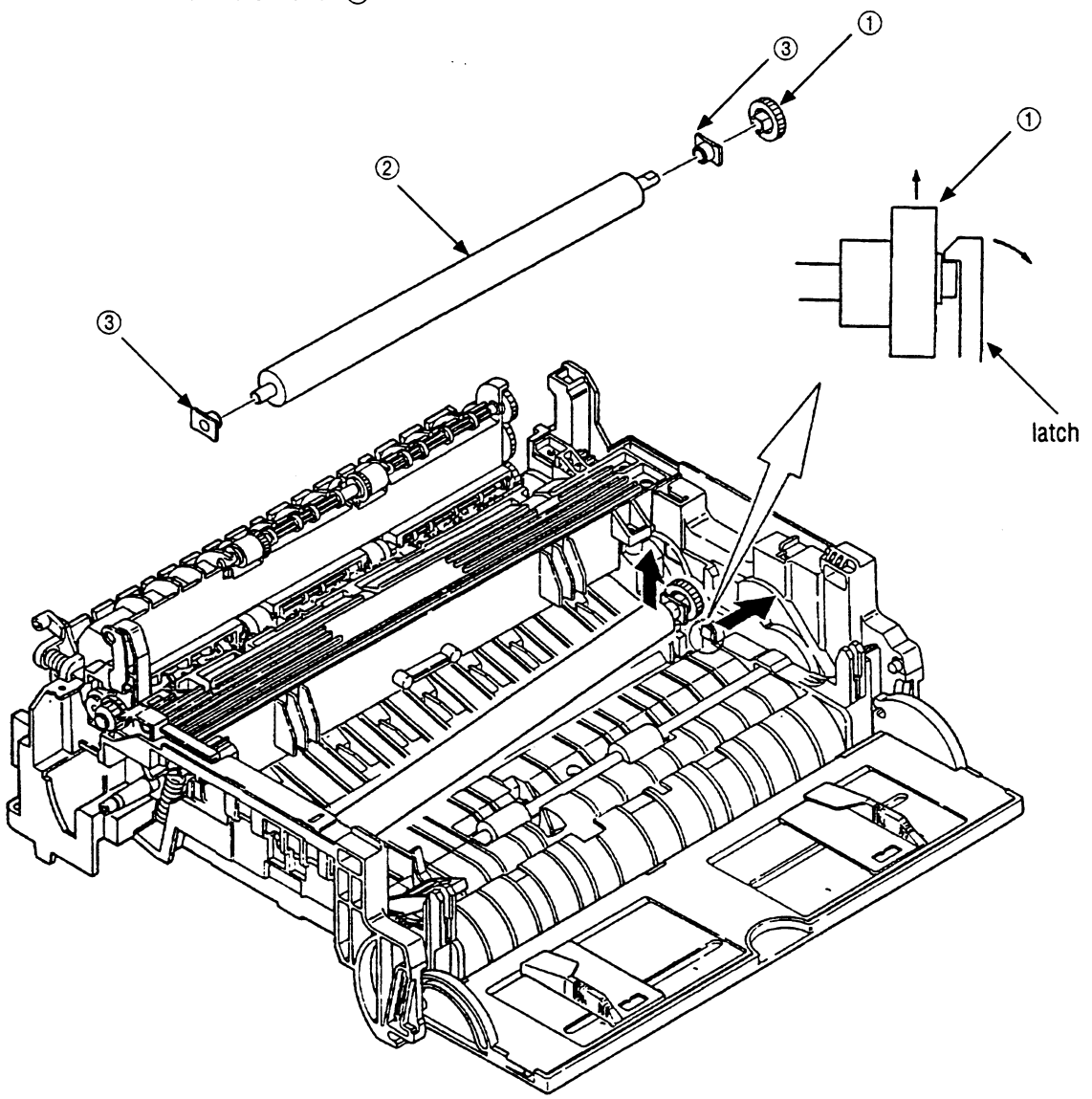
(2) Open the stacker cover.

(3) Release TR gear ① by unlocking the latch of the main unit.
(Never apply an excessive force when unlocking the latch.)

(4) Lift the right side of the transfer roller ② and shift to the right side, then pull it out from the main unit.

(At this time, the bearings ③ of the left and right side of the transfer roller ② will be released of themselves.)

Notes: 1) When exchanging the transfer roller ② of the printers with a serial number up to and including S/N 303Axxxxx exchange the bearing ③ at the same time.
2) For the printers with a serial number S/N 304Axxxxx onward, exchange only the transfer roller ②.



3.3.14 Fusing unit

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

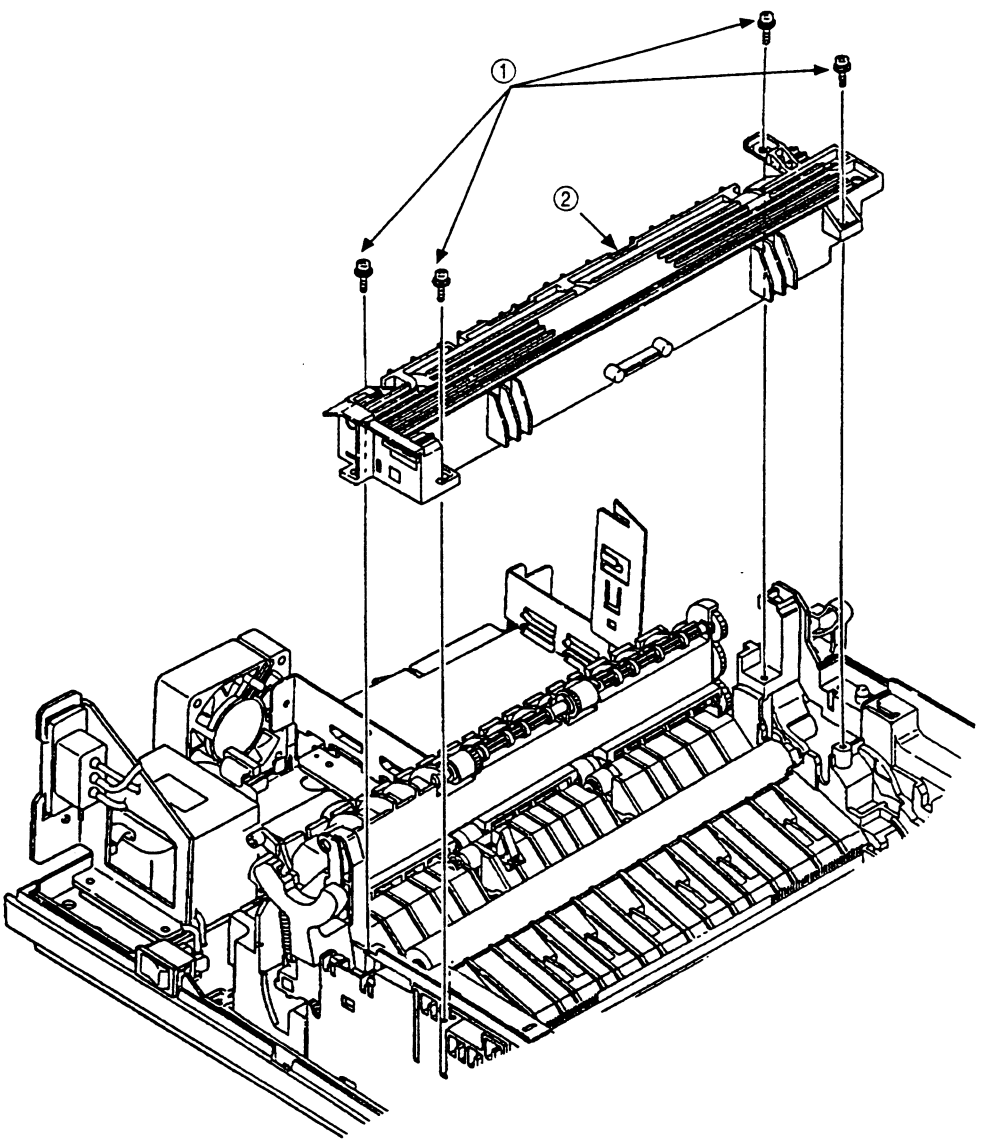
(3) Remove the stacker cover assy. (See 3.3.11)

(4) Remove four screws ① and remove the fusing unit ②.

Caution: Fusing unit may be hot. Use care when handling.

Notes: 1) When installing or removing the fusing unit, tighten or loosen the screws while fusing unit down with a hand.

2) The fusing unit of the printers with a serial number up to and including S/N 303Axxxxx cannot be exchanged. See Appendix E and then exchange the parts of the fusing unit. For the printers with a serial number S/N 304A xxxxx onward, exchange the fusing unit.



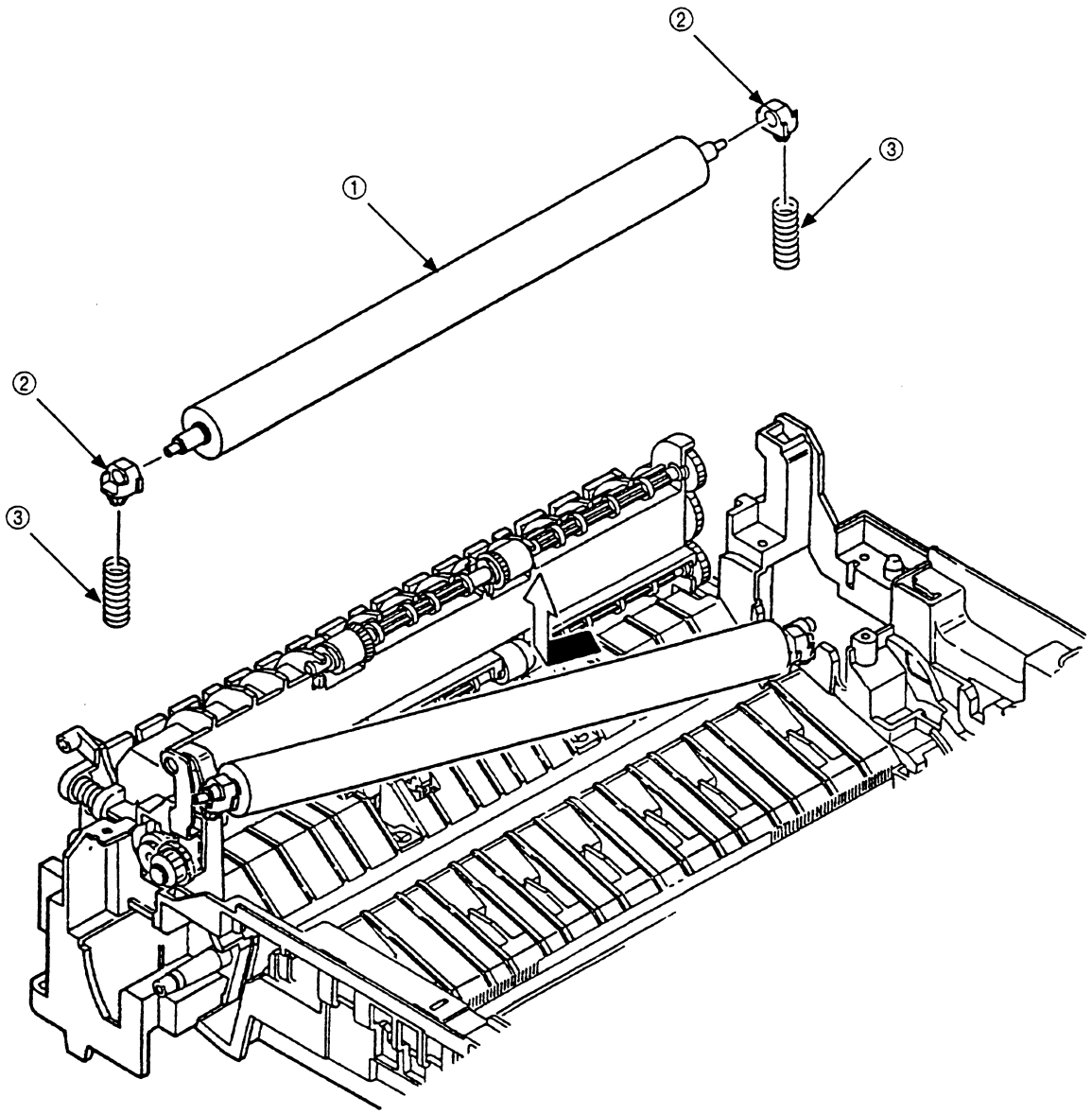
3.3.15 Back-up roller

(1) Remove the fusing unit assy. (See 3.3.14)

(2) Lift the left side of the back-up roller ① and pull it out to the left side. (At this time, two bushings ② and the bias spring ③ will be released of themselves.)

Note: The back-up roller and bias spring are different for those printers with serial numbers up to and including S/N 303Axxxxx and those with serial numbers after S/N 304Axxxxx. When exchanging the back-up roller or bias spring, be sure to use the ones suitable for the serial number of the printer.

Parts name	Use for Product	
	Up to and including S/N 303Axxxxx	S/N 304Axxxxx and thereafter
Back-up roller	P/N 3PB4083-6050P1	P/N 3PB4083-6064P1
Bias spring	P/N 4PP4083-6051P1	P/N 4PP4083-6065P1

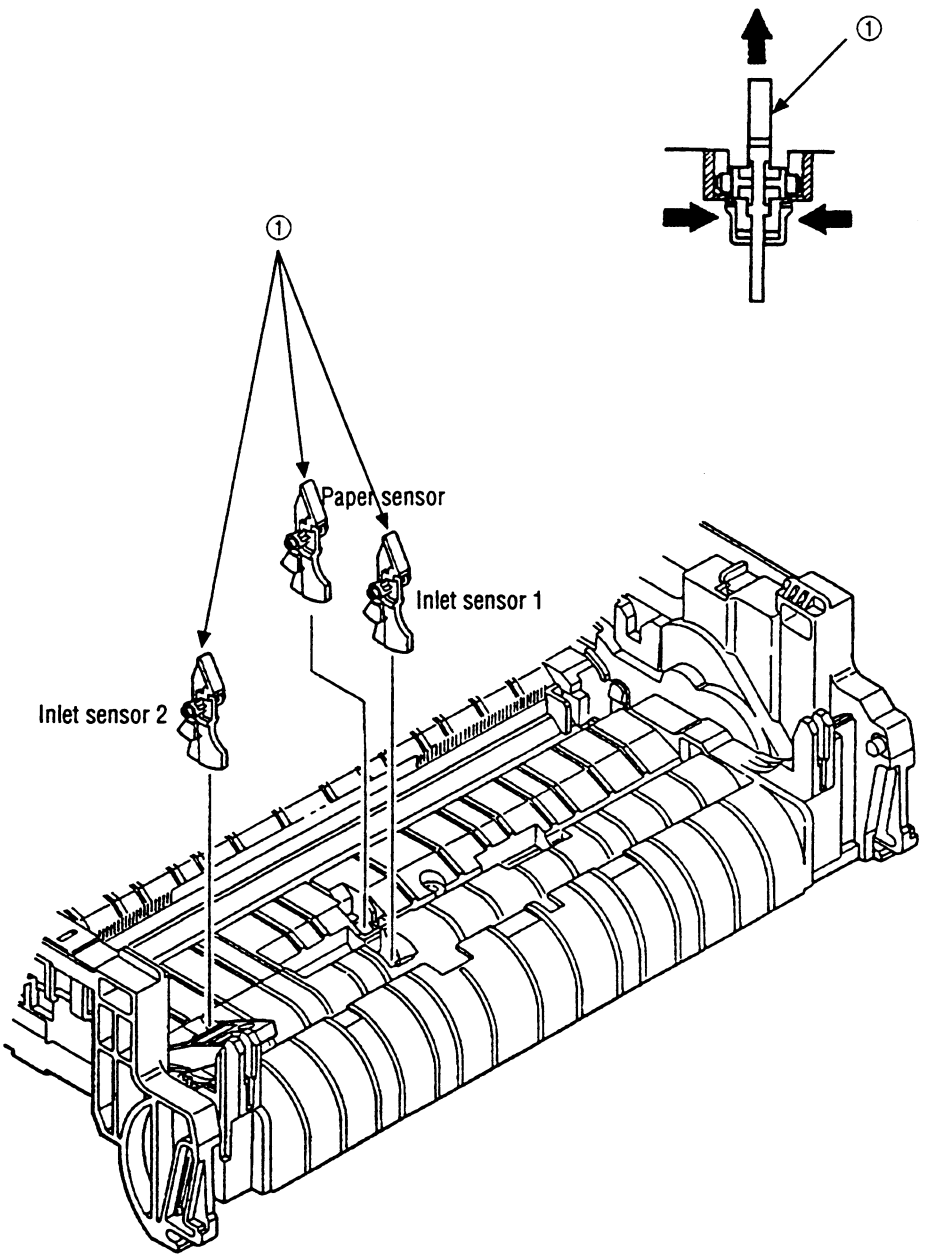


3.3.16 Sensor plate (Inlet)

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Press the clamps of three sensor plates (inlet) ① and remove the sensor plates by pressing upwards from the bottom side.

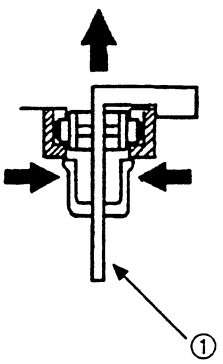


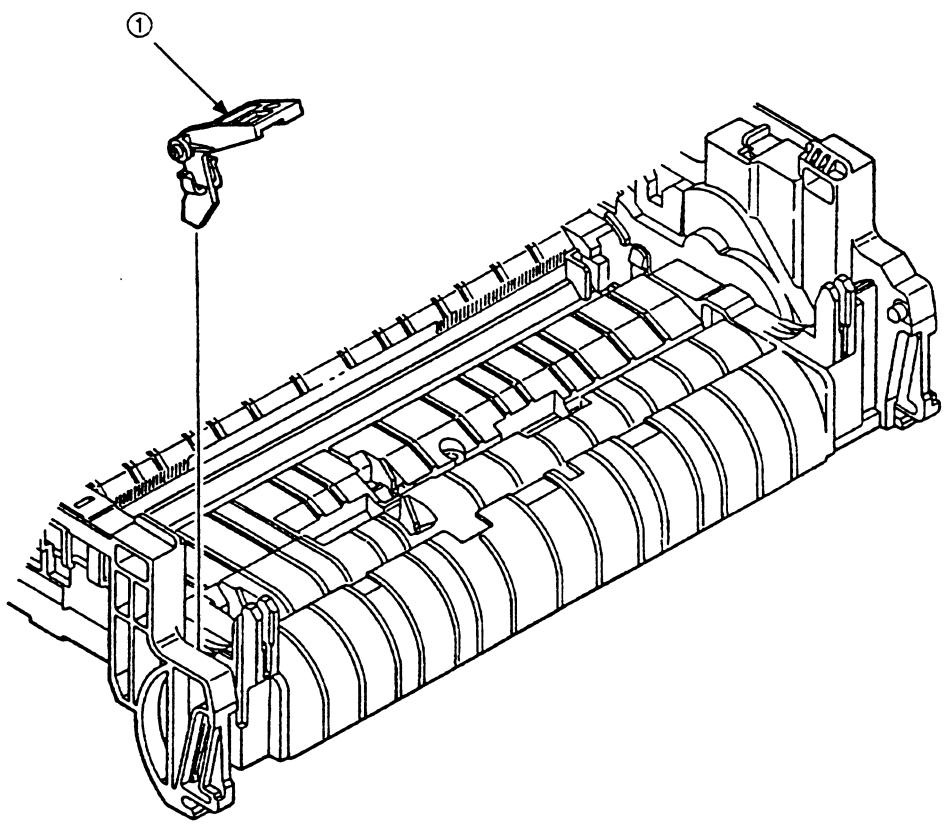
3.3.17 Toner sensor

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Press the clamp of the toner sensor ① and remove the sensor by pushing up.





3.3.18 Sensor plate (Outlet)

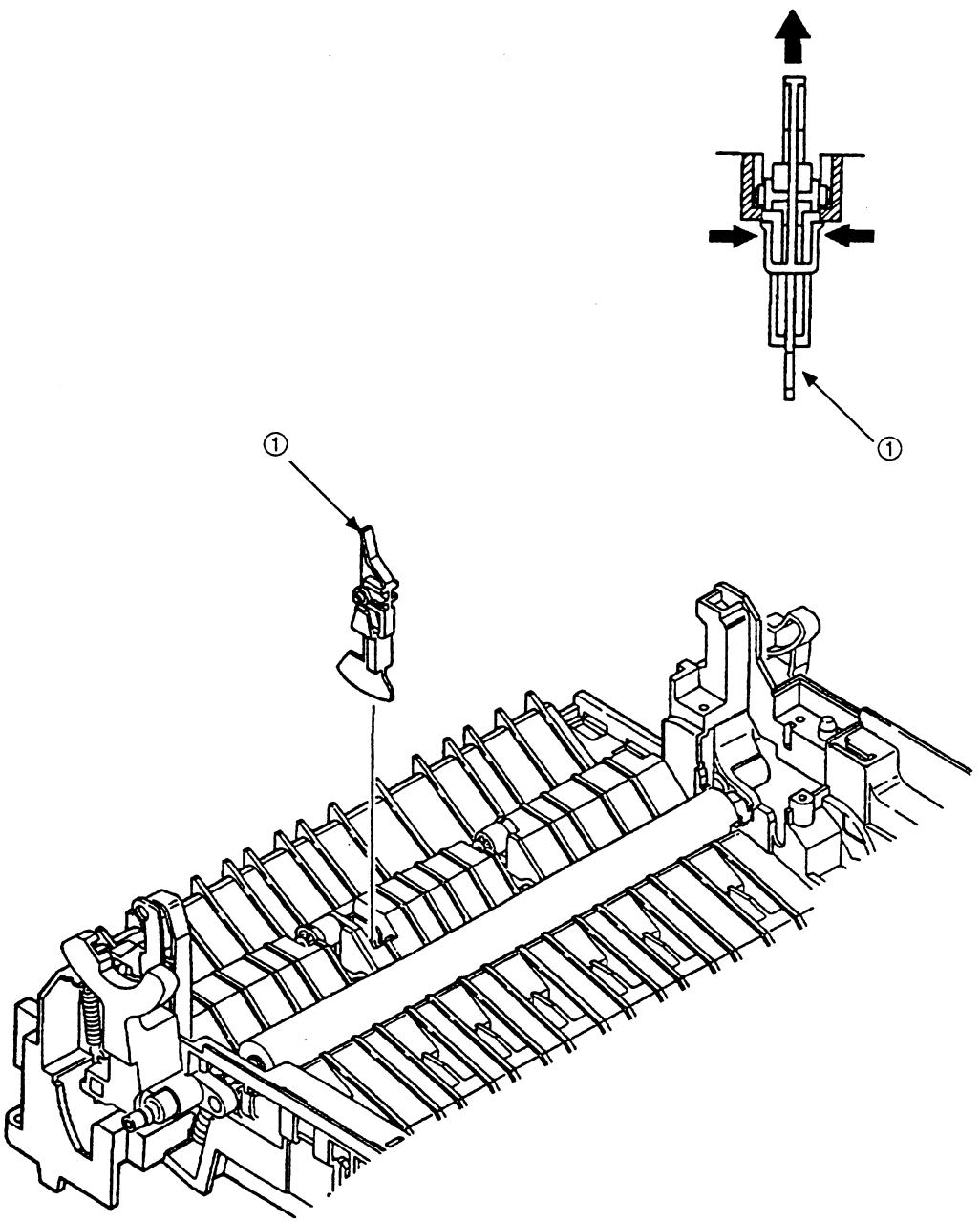
(1) Remove the upper cover. (See 3.3.1)

(2) Remove the eject roller assy. (See 3.3.5)

(3) Remove the lower base unit. (See 3.3.8)

(4) Remove the fusing unit assy. (See 3.3.14)

(5) Press the clamp of the sensor plates (outlet) ① and remove the sensor plate by pushing up.

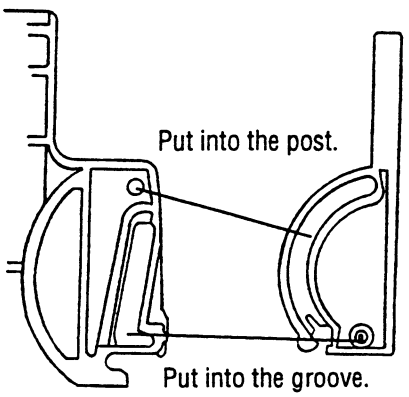


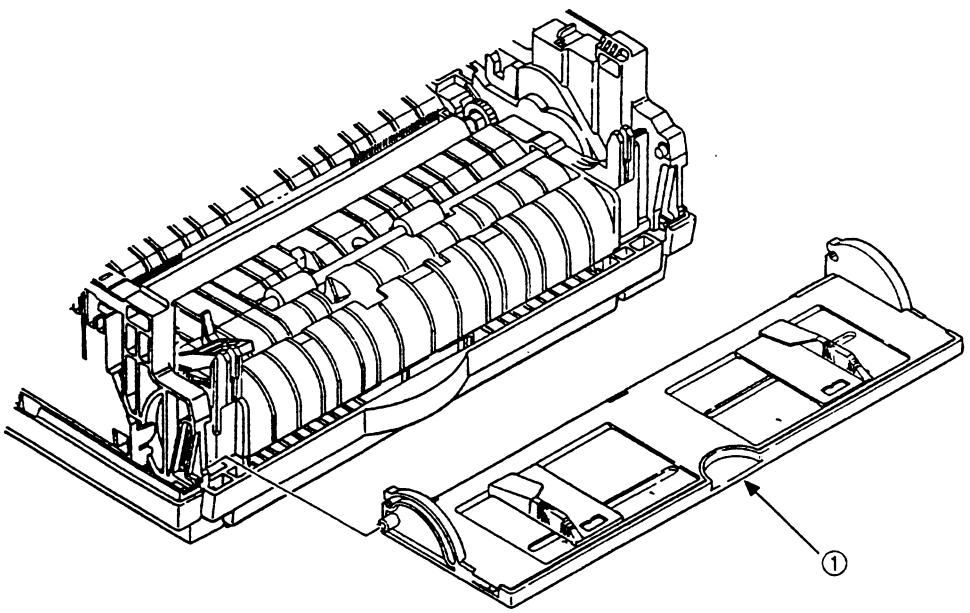
3.3.19 Manual feed guide assy

(1) Remove the upper cover. (See 3.3.1)

(2) Open the manual feed guide assy ① and release the engagement on both sides with the main unit by carefully bending the manual feed guide assy ①.

Note: At the time of mounting, confirm that the engagements are proper see diagram.



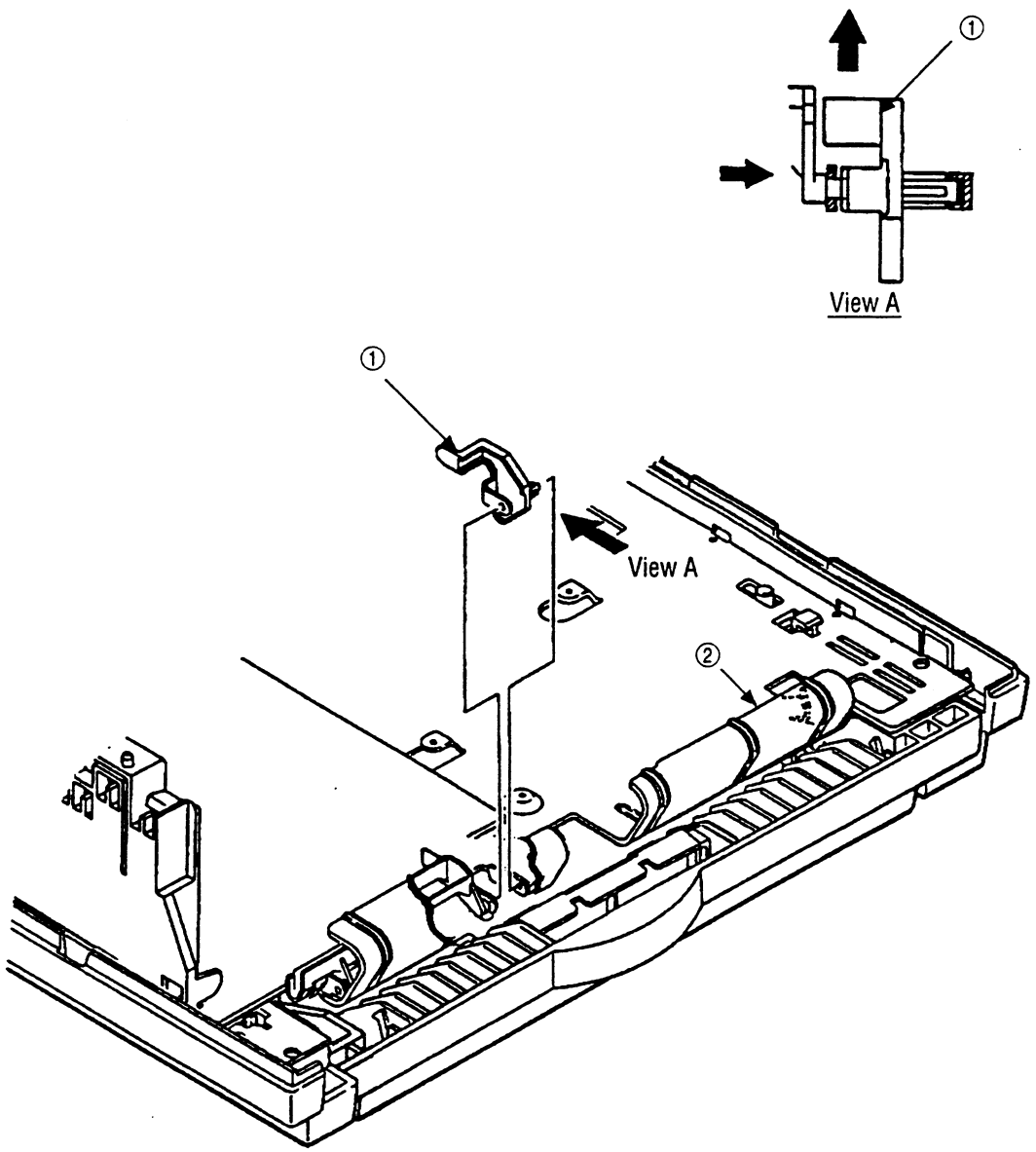


3.3.20 Sensor plate (paper end)

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Press the clamp of the sensor plate (paper end) ① and remove from the base plate ②.



3.3.21 Control board (OLCW-)

When exchanging the control board (OLCW), remove the EEPROM installed on the existing board and then install it on a new one.

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Remove two screws ①.

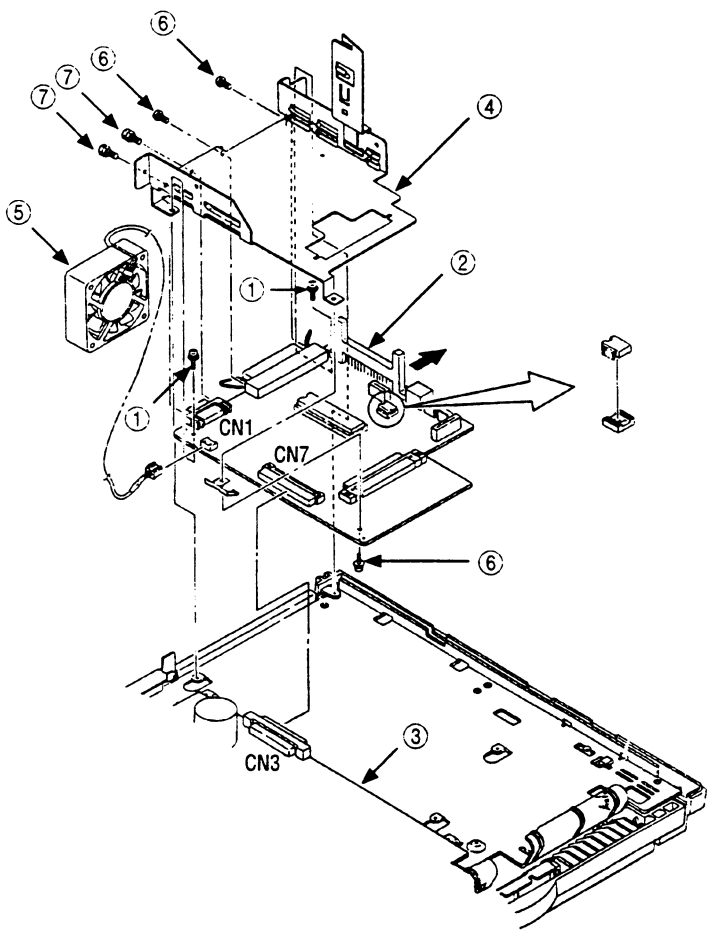
(4) Move the control board (OLCW-) ② in the direction of the arrow to disconnect it from the power supply board ③.

(5) Remove the control board (OLCW-) ② together with the PCB guide plate ④. (Remove the fan motor ⑤ at the same time.)

(6) Remove three screws ⑥ and two posts ⑦, and remove the PCB guide plate ④ from the control board (OLCW-) ②.

(7) Disconnect the connector from CN1 of the control board (OLCW-) ②, and remove the fan motor ⑤.

Note: Install the removed EEPROM on the new OLCW board.



3.3.22 Power supply board and contact assy

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the lower base unit. (See 3.3.8)

(3) Remove the control board (OLCW-). (See 3.3.21)

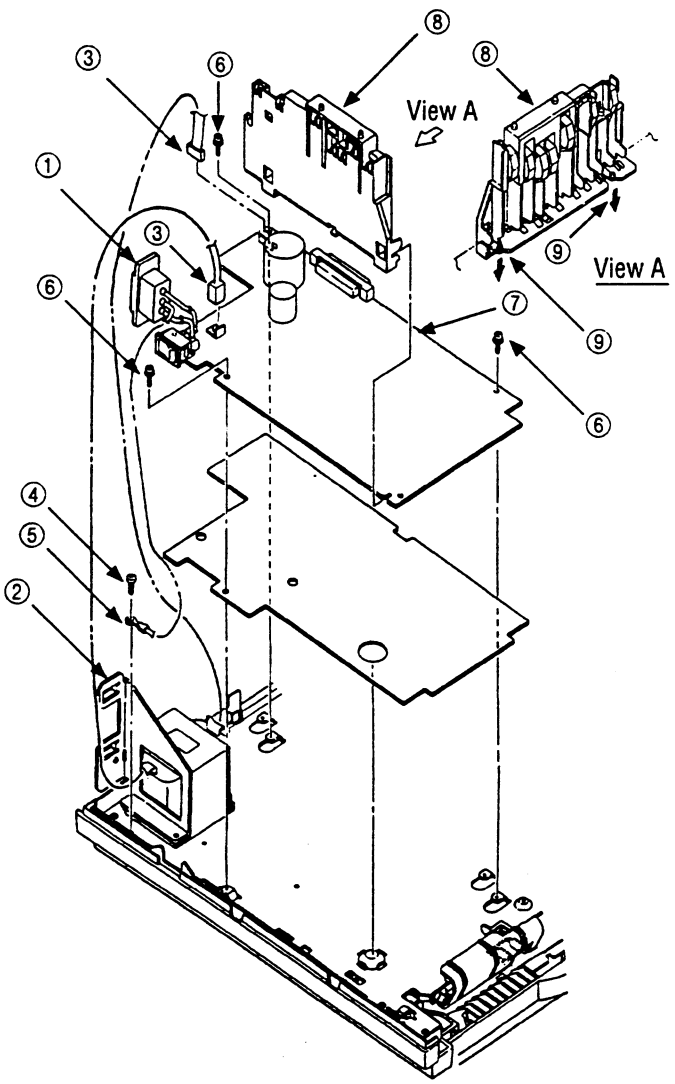
(4) Remove the AC inlet ① from the inlet holder ② and remove the connector ③ of the transformer.

(5) Remove the screws ④ and remove the ground cable.

(6) Remove three screws ⑥, and remove the power supply board ⑦ and contact assy ⑧ at the same time.

(7) Unlock two claws ⑨ and remove the contact assy ⑧ from the power supply board ⑦.

Note: When mounting the lower base unit, pay attention to the paper sensor.
Pay attention to the power switch not to get excessive force.



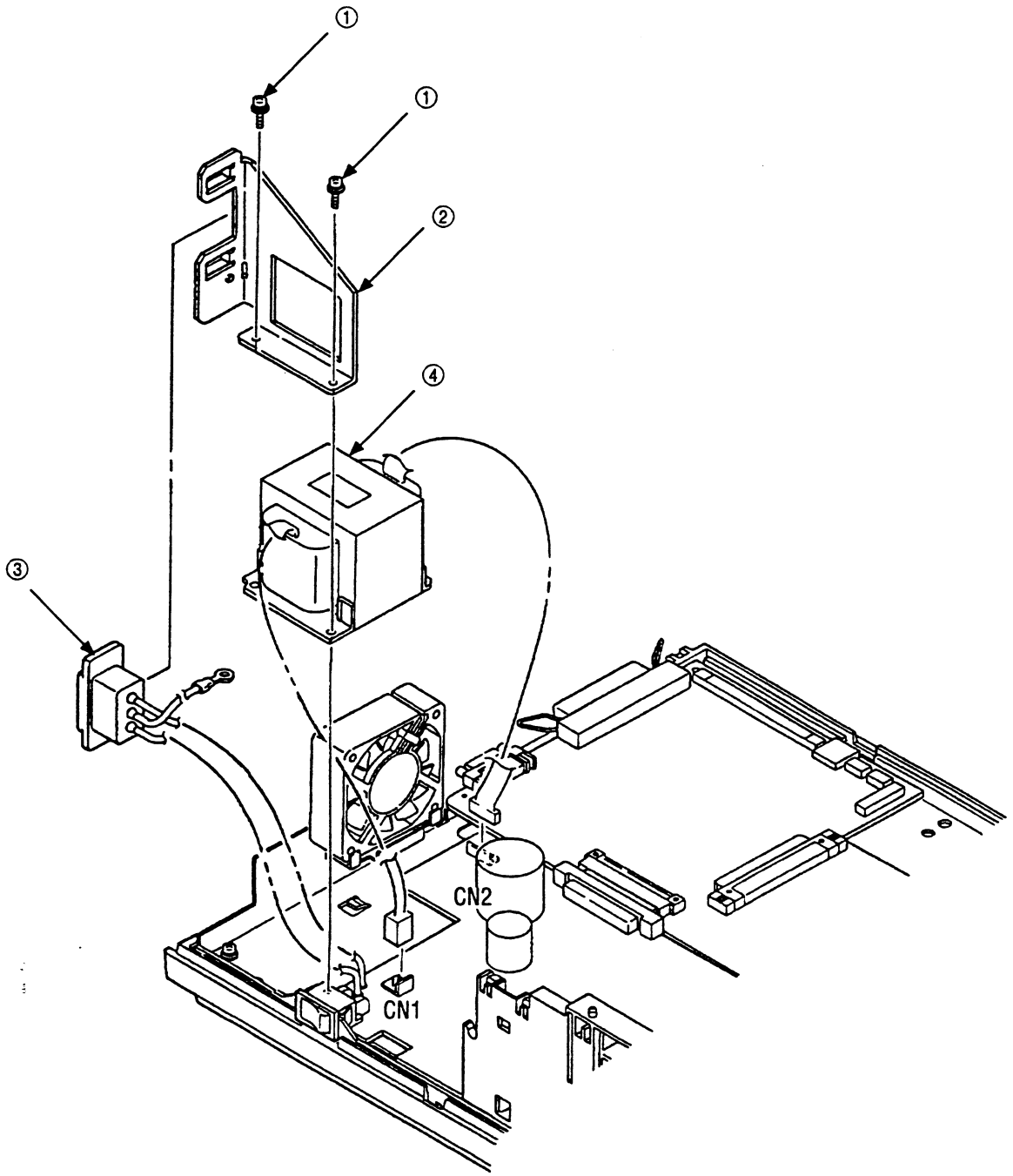
3.3.23 Transformer

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the connector (CN1) (CN2).

(3) Remove the inlet ③ from the inlet holder ②.

(4) Remove two screws ① and remove the inlet holder ② and the transformer ④.



3.3.24 Cassette guide L

(1) Remove the paper cassette.

(2) Remove the upper cover. (See 3.3.1)

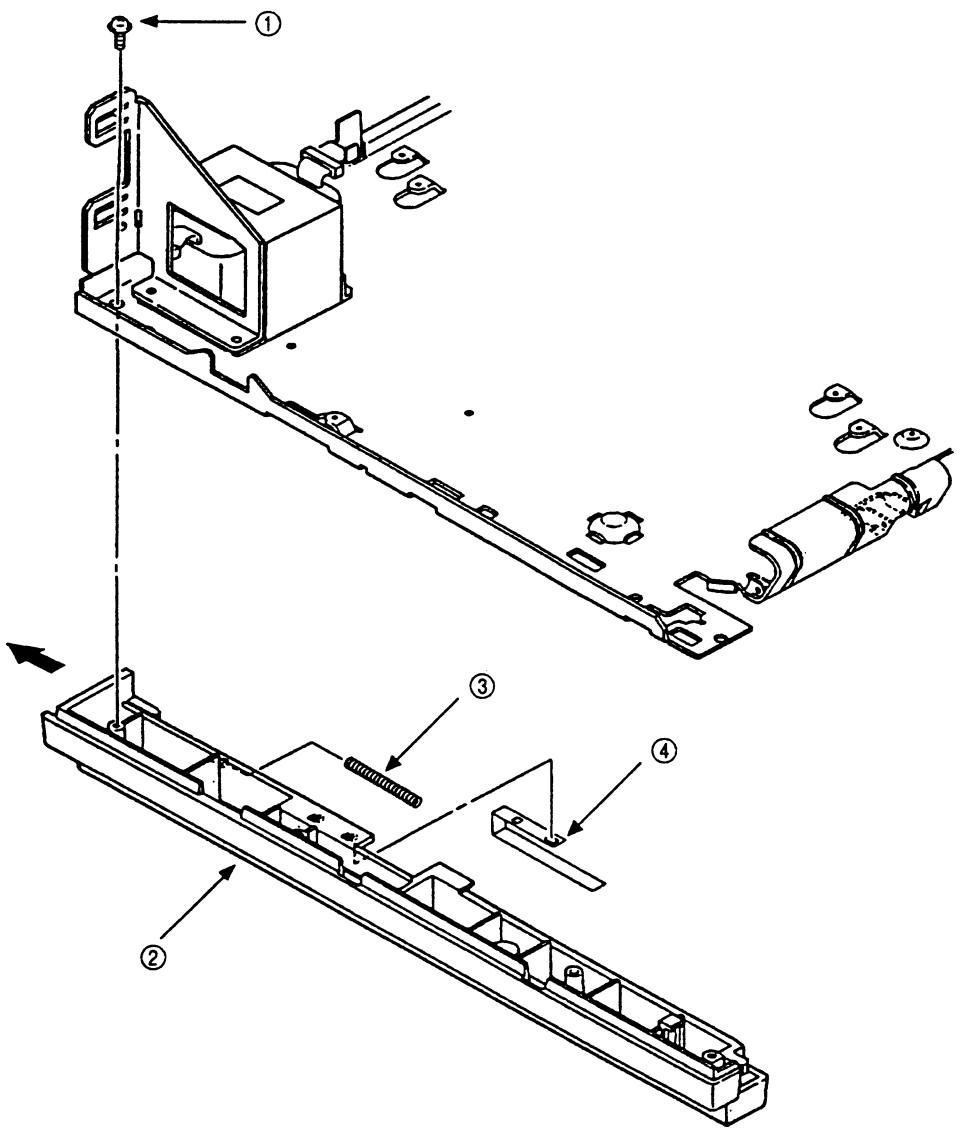
(3) Remove the lower base unit. (See 3.3.8)

(4) Remove the control board (OLCW-). (See 3.3.21)

(5) Remove the power supply board. (See 3.3.22)

(6) Remove the screw ①, and remove the cassette guide L ② by shifting it in the direction of the arrow.

(7) Detach the eject spring ③, and remove the support spring ④ from the cassette guide L ②.



3.3.25 Cassette guide R

(1) Remove the paper cassette.

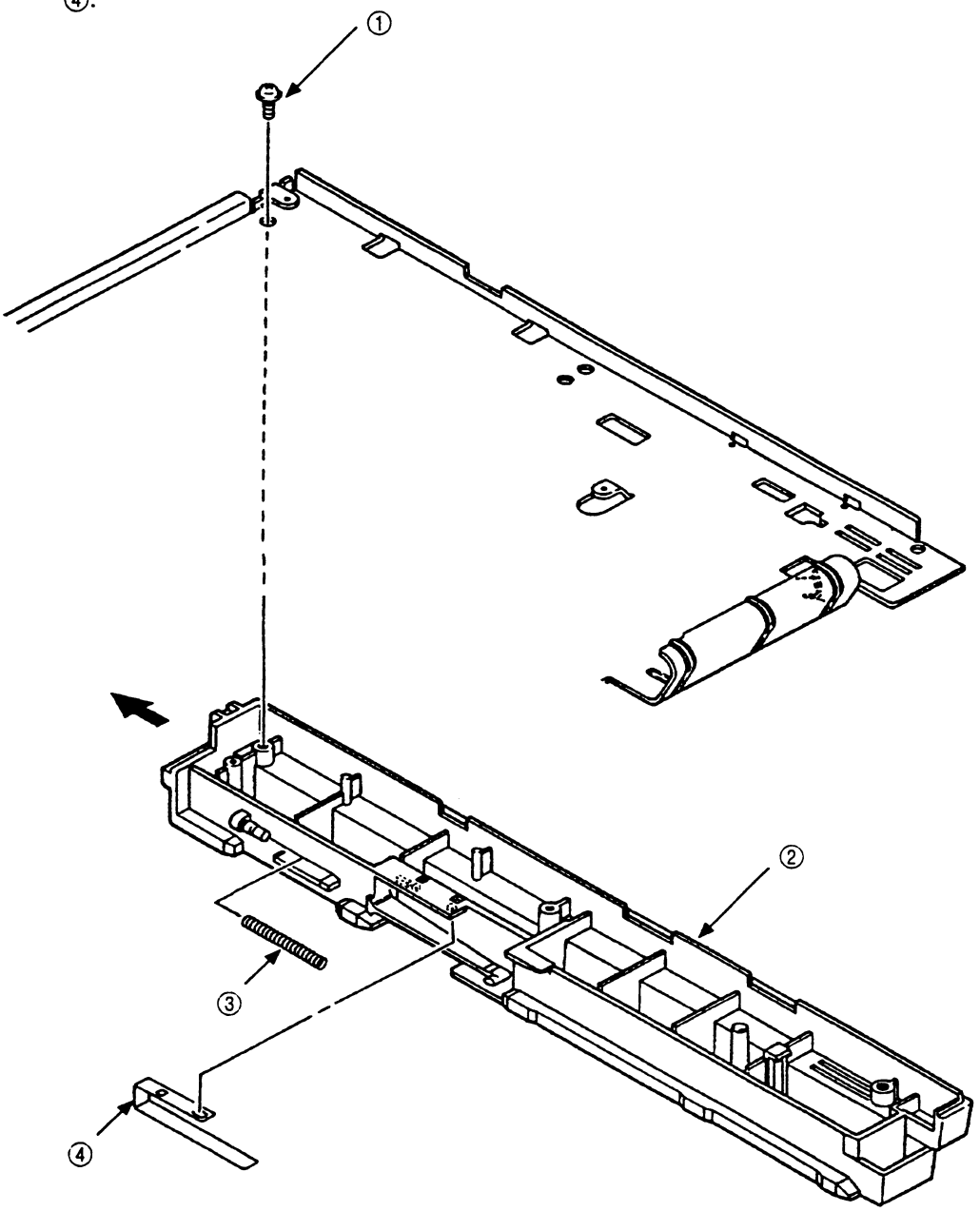
(2) Remove the upper cover. (See 3.3.1)

(3) Remove the lower base unit. (See 3.3.8)

(4) Remove the control board (OLCW-). (See 3.3.21)

(5) Remove the screw ①, and remove the cassette guide R ② by shifting it in the direction of the arrow.

(6) Pull the eject spring ③ out of the cassette guide R ②, then remove the support spring ④.



4. ADJUSTMENT

4. ADJUSTMENT

This chapter explains the adjustment necessary when replacing a part. Adjustment is made by changing a parameter value set in EEPROM on the control board (OLCW-). A parameter is able to set with the key operation on the operator panel. This printer has three kinds of the maintenance mode, it is required to select one of the maintenance mode necessary when replacing a part.

4.1 Maintenance Modes And Functions

4.1.1 User maintenance mode

To enter the user maintenance mode, turn on the POWER switch while pressing the MENU key.

Function

There are four functions as follows.

- Hex dump
- Drum counter reset
- Menu reset
- Opepane menu disable

Detailed description of these functions is in Appendix D **DIAGNOSTICS TEST**.

4.1.2 System maintenance mode

Note: This mode is used only by service persons and it should not be released to the end-users.

To enter the system maintenance mode, turn on the POWER switch while pressing the RECOVER key.

Function

There are five functions as follows.

- Page count display
- Loop test
- Page count printing enable/disable
- EEPROM reset
- Rolling ASCII continus prinitng

Detailed description of these functions is in Appendix D **DIAGNOSTICS TEST**.

4.1.3 Engine maintenance mode

Note: This mode is used only by service persons and it should not be released to the end-users.

To enter the engine maintenance mode, turn on the POWER switch while pressing the FORM FEED key and ENTER key.

Function

There are five functions as follows.

- Head drive time setting
- Printing start position setting
- Drum count display
- Drum count total display
- Engine reset

Note: "Printing start position setting" is for shipping. Do not change the default value of it.

Detailed description of these functions is in Appendix D **DIAGNOSTICS TEST**.

4.2 Adjustment When Replacing A Part

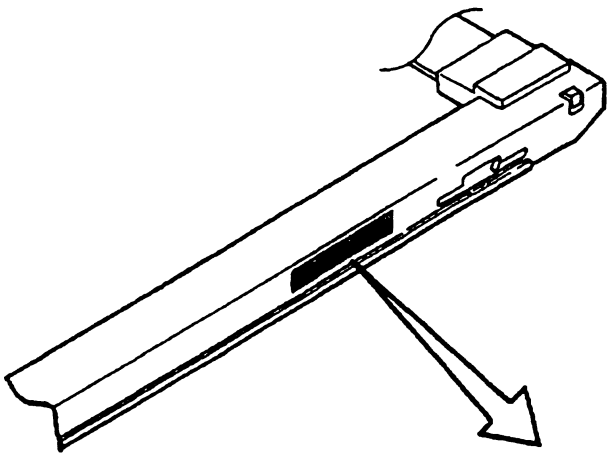
Adjustment necessary when replacing one of the followimg parts.

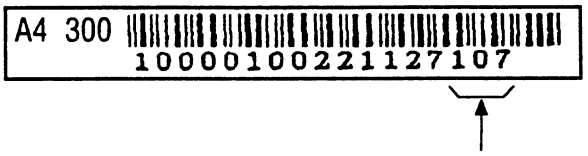
Part Replaced	Adjustment
LED Head	Set the LED head drive time.
Image Drum Cartridge	Reset the image drum counter. (Refer to User's manual)

4.2.1 Setting of LED head drive time

Note: When the luminous intensity marking of the replaced LED head (new part) is same as that of the used LED head (old part), do not set the LED head drive time.

- Luminous intensity marking label





Last 3 digits indicate the
LED head marking number.

Luminous intensity marking
100
|
313

- Setting the LED head drive time

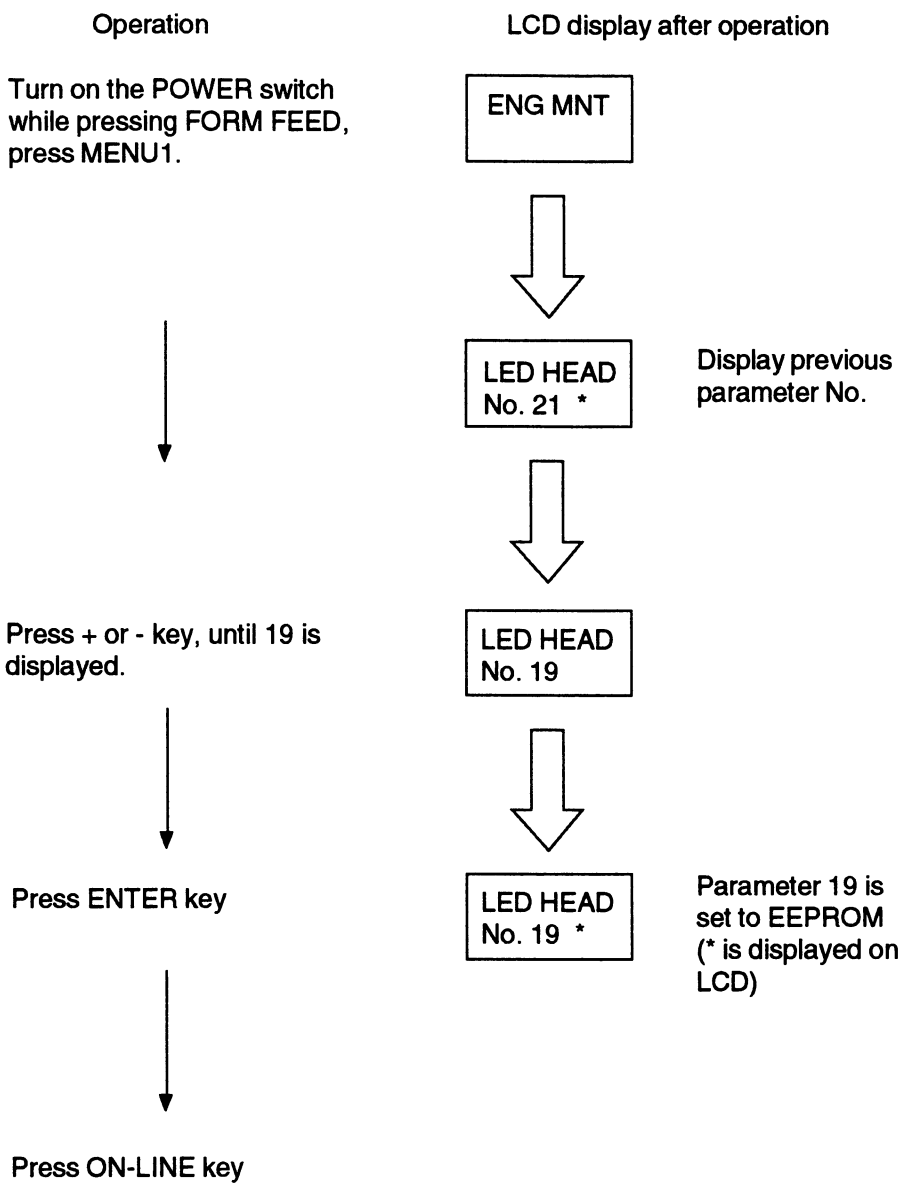
  The LED head drive time parameters correspond to the luminous intensity setting values marked on the LED head. The drive time parameter is stored in the EEPROM.

  a. Luminous intensity displays of the LED head and the corresponding drive time parameters

Luminous intensity display on LED head	Drive time parameter	Luminous intensity display on LED head	Drive time parameter
100 ~ 104	27	181 ~ 195	19
105 ~ 112	26	196 ~ 211	18
113 ~ 121	25	212 ~ 228	17
122 ~ 131	24	229 ~ 247	16
132 ~ 142	23	248 ~ 268	15
143 ~ 154	22	269 ~ 290	14
155 ~ 167	21	291 ~ 313	13
168 ~ 180	20		

b. Setting

Example: Method for setting the parameter to 19 (when the previous parameter is 21).


Operation
LCD display after operation
Turn on the POWER switch while pressing FORM FEED, press MENU1.
ENG MNT
LED HEAD No. 21 *
Display previous parameter No.
Press + or - key, until 19 is displayed.
LED HEAD No. 19
Press ENTER key
LED HEAD No. 19 *
Parameter 19 is set to EEPROM (* is displayed on LCD)
Press ON-LINE key

5. PERIODIC MAINTENANCE

5. PERIODIC MAINTENANCE

5.1 Periodic Replacing Part

As specified below, the parts shall be replaced periodically.

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge have been printed.	About 2,000 sheets of paper	• LED head.	Consumables
• Image drum cartridge	About 20,000 sheets of paper have been printed.		Consumables

5.2 Cleaning

Remove any dropped toner and dust. Clean inside and around the printer with a piece of cloth when necessary. Use the handy cleaner (service tool) for cleaning the printer interiors.

Note: Do not touch image drum, LED lens array, and LED head connector block.

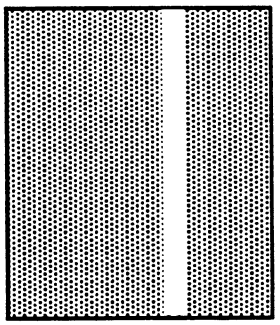
5.2.1 Cleaning of LED lens array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page.

Note: The LED lens array must be cleaned with an LED head cleaner.

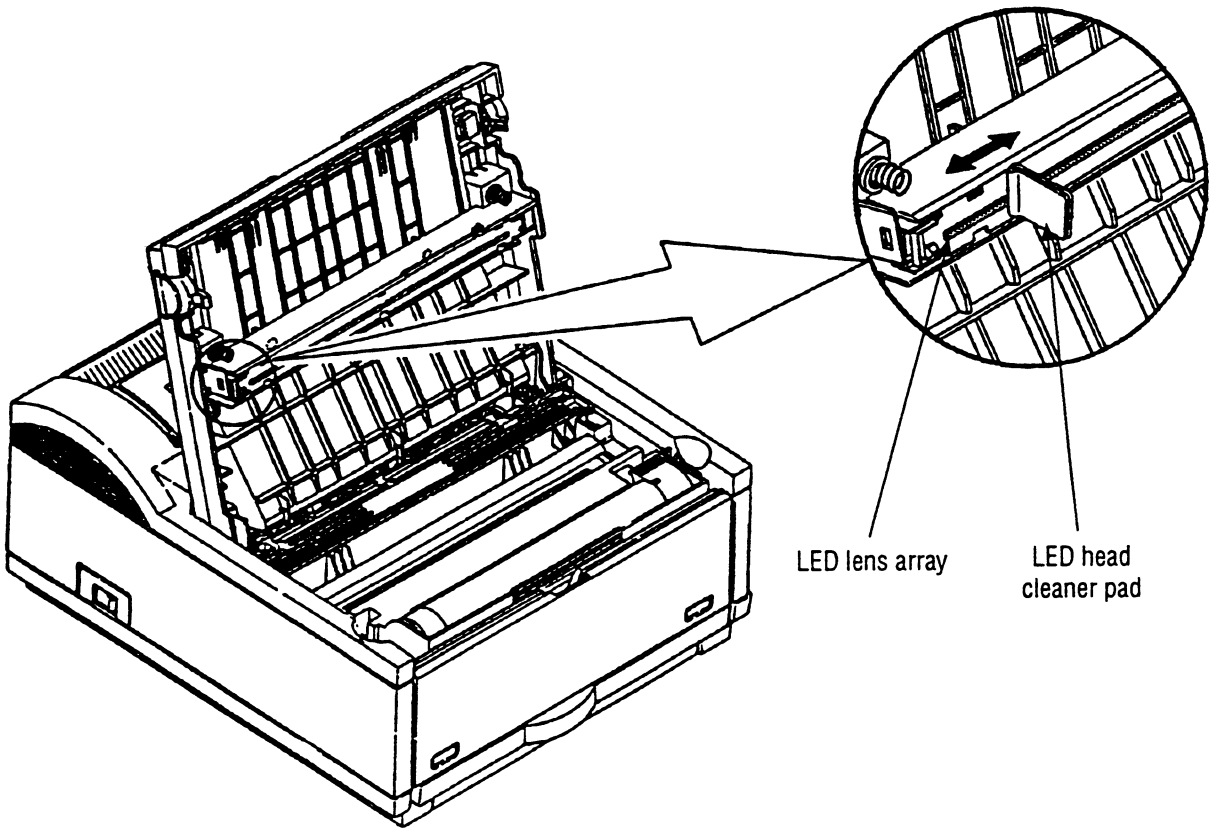
White lines or stripes

(void, light printing)



(1) Set the LED head cleaner in the LED lens array as shown in the figure, then slide the cleaner horizontally several times to clean the head.

Note: Gently press the LED head cleaner onto the LED lens array.



(2) Throw cleaner pad away.

6. TROUBLESHOOTING PROCEDURES

6. TROUBLESHOOTING PROCEDURES

6.1 Troubleshooting Tips

(1) Check the basic check points covered in the user's manual.

(2) Gather as much information on the problem from the customer as possible.

(3) Perform inspections in conditions close to those in which the problem had occurred.

6.2 Points of Check before Correcting Image Problems

(1) Is the printer being run in proper ambient conditions?

(2) Have the supplies (toner) and the routine replacement part (image drum cartridge) been replaced properly?

(3) Is the printing paper normal?

(4) Has the image drum cartridge been loaded properly?

6.3 Tips for Correcting Image Problems

(1) Do not touch, or bring foreign matter into contact with the surface of the image drum.

(2) Do not expose the image drum to direct sunlight.

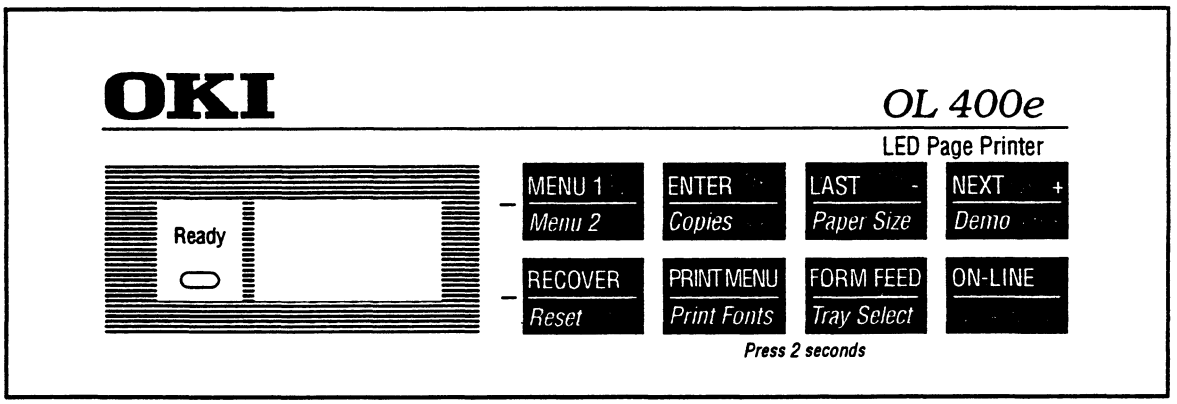
(3) Keep hands off the fuser unit as it is heated during operation.

(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of this printer is displayed on the liquid crystal display (LCD) in the operator panel. Take proper corrective action as directed by messages that are displayed on the LCD.



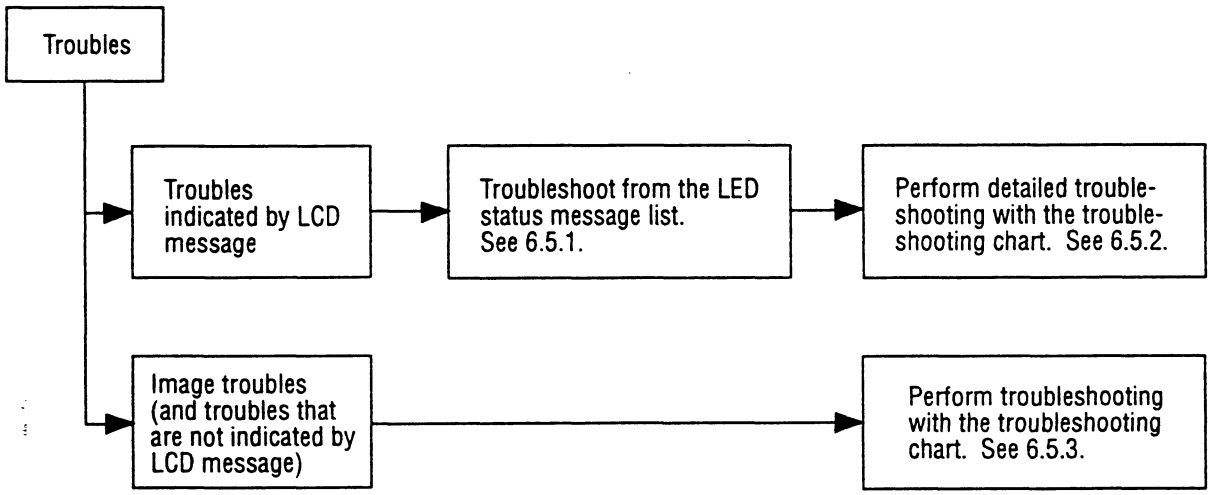
Status message display

Ready LED display

■ : OFF ▨ : BLINKING
▨ : ON ▭ : Undefined

6.5 Troubleshooting Flow

If troubles should develop in this printer, troubleshoot in the following procedure flow:


Troubles
Troubles indicated by LCD message
Troubleshoot from the LED status message list. See 6.5.1.
Perform detailed trouble-shooting with the trouble-shooting chart. See 6.5.2.
Image troubles (and troubles that are not indicated by LCD message)
Perform troubleshooting with the troubleshooting chart. See 6.5.3.

6.5.1 LCD status message/trouble list

Table 6-1 lists the status and troubles that may be indicated by messages on the LCD.

Table 6-1

Category	LCD status message	Trouble or status	Remedy
Controller errors	ERROR On aaaaaaaa	An error occurred in the controller. n = Exception Code aaaaaaa = Error Address	– Normal operation cannot be ensured. Turn the power off, then on to restart. – If normal operation cannot be recovered by this restart procedure, replace the OLCW PCB.
	CARD FORMAT	A checksum error occurred when a card was inserted.	– Turn the power off, then on to recover from the error. – If a card other than those for OL printer is inserted, no error is displayed to ignore the inserted card.
	ERROR nn	An error occurred in the controller.	– Turn the power off, then on to recover from the error. – If the normal operation cannot be recovered by this restart procedure, use the following remedial actions.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	■ ERROR nn	Code (nn)	Error	Remedy
		On	A fault occured in the controller. n = Exception Code	Replace the OLCW-PCB.
		10	An error was detected by program ROM check.	Replace the OLCW-PCB.
		20	An error was detected by font ROM check.	Replace the OLCW-PCB.
		30	An error was detected by resident RAM check.	Replace the OLCW-PCB.
		40	An error was detected by EEPROM check.	– Replace the EEPROM or OLCW-PCB – EEPROM
		50	An error was detedted by optional software ROM check.	Check the optional software ROM board for proper connection or replace it.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	■ ERROR nn	Code (nn)	Error	Remedy
		60	An error was detected by optional RAM check.	_ Check the optional RAM board for proper connection. _ Check the mounting position of short plugs and additional RAM chips. (Refer to 7.4) _ Replace the option RAM board.
		70	A fault occurred in the Fan motor.	_ Check the fan motor for proper connection and for the presence of foreign natter in the fan. _ Replace the fan or the OLCW-PCB.
		71	A fault occurred in the fuser. (Thermistor short, Timeout error etc.)	See 6.5.2 - ④
		72	A fault occurred in the fuser. (Thermistor open error)	See 6.5.2 - ④
		80	I/F timeout occurred between the OLCW-PCB and the operation panel.	See 6.5.2 -

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	■ ERROR nn	Code (nn)	Error	Remedy
		81	I/F timeout occurred between the OLCW-PCB and the optional tray (2nd tray, envelope feeder, etc.)	Check the optional tray for proper connection.
		90	A watchdog timer timeout occurred.	– Turn the power off, then on to recover from the error. – Replace the OLCW-PCB.
Interface errors	■ HOST I/F ERROR	An error occurred in the serial I/F. This message is displayed when a parity error, a framing error or an overrun error is detected.		– Press the operator panel RECOVER key to release the error display. – Check the settings related serial I/F of the menu. – Replace the serial I/F cable or OLCW-PCB.
Cover open	■ COVER OPEN	The upper cover was opened.		– Close the cover to release the error display. – If the display does not change after this procedure, replace the OLAA-PCB.
Jam errors	■ PAPER INPUT JAM	A jam occurred during paper hopping from the tray.		– Check the paper in the cassette section. Open and then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see 6.5.2 ②-1.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Jam errors	■ PAPER FEED JAMn	A jam occurred during paper feeding after finishing paper hopping from the tray.	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is release. – If this error occurs frequently, see 6.5.2 ②-2.
	■ PAPER EXIT JAMn	Jam occurred during paper ejecting.	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see 6.5.2 ②-3.
Paper size error	■ PAPER SIZE ERRn	Paper of improper size was fed from the tray.	– Check the paper in the tray or check to see if more than one sheet of copy were fed simultaneously. _ Set the designated paper to the tray. _ Open the cover, then close it to perform recovery printing and release the error display. _ If this error occus frequently, see 6.5.2 ③.
Tray paper out	■ TRAY PAPEROUT	The tray has run out of paper.	– Load paper to the tray.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Size error	■ LETTER PAPER	Loading of paper indicated by the first line message is requested. LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE	– Load the requested paper in the tray.
	■ LETTER MANUAL	Manual loading of paper indicated by the first line message is requested. The paper size displayed by the first line message is: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE, COM-10, MONARCH, DL ENV, C5 ENV	– Load the requested paper in the manual tray.
Optional card error	■ CARD ERROR	During power-on state, card was inserted or removed.	_ Turn power off, inserted card then on to recover from the error. _ Replace the card.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Buffer overflow	■ REC BUFF OVERFLOW	The receive buffer was overflowed.	– Press the operator panel RECOVER key to release the error display. – Change the setting of the host side or printer side so that the Host can detect the busy status of the printer. Resend the data from the host side to the printer. – Replace the interface cable or OLCW-PCB.
	■ PAGE BUF OVERFLOW	The page buffer was overflowed because it received too much data to be printed in the page.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the amount of print data.
	■ DLL BUFF OVERFLOW	The DLL buffer was overflowed.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the amount of DLL data.
	■ MACRO OVERFLOW	Macro buffer was overflowed.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the number of macros.
	■ PRINT OVERRUN	The printer overrun because print data is too complicated to be printed.	– Press the operator panel RECOVER key to release the error display. – Simplify page data formatting.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	■ OFF-LINE HPIIP	The printer is in the off-line mode.	
	▭ DATA HPIIP	The printer is processing data in the on-line mode. Ready ON: The data that is not printed remains in the buffer. Ready flashing: The printer is receiving data.	
	▨ PRINT FONTS	All fonts of the printer are being printed during self-test.	
	▭ PRINT MENU	The current menu setting is being printing. Ready ON: Executed by command entry. Ready flashing: Executed by key operation.	

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	PRINT DEMO	The demo page is being printed.	
	CPYnn/mm	When the number of copies being printed is two or more, the number of copies being printed is displayed. This message is displayed in combination with other message indicated on the first line.	
	RESET	The data that remains unprinted in the buffer is deleted and the printer is initialized to user default settings. The temporary DLLs and macros are deleted.	
	RESET TO SAVE	This message is displayed when the printer cannot be reset automatically to exit from the menu because there are data and DLLs and macros having temporary attributes when the printer is changed from set mode to other mode.	

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	TONERLOW	Toner is running out. This message is displayed in combination with other message on the first line. Normal operation can be continued.	– Replace the toner cartridge.
	TONERSNS	A fault occurred in the tonersensor. This message is displayed in combination with other message indicated on the first line. Normal operation can be continued.	
	CHG DRUM	This message is displayed in combination with other message indicated on the first line. Normal operation can be continued.	– Replace the image drum cartridge. – After replacing the drum cartridge, reset the drum counter. (Refer to the User's Manual.)
	PWR SAVE	The printer is in the power-saving mode. This message is displayed in combination with other message indicated on the first line.	

6.5.2 LCD message troubleshooting

If troubles are not correctable from the LCD message trouble list, follow the troubleshooting flowcharts given here to deal with them.

No.	Trouble	Flowchart number
1.	The printer does not work normally after being turned on.	①
2.	Jam alarm	
	├ Paper input jam	②-1
	├ Paper feed jam	②-2
	└ Paper exit jam	②-3
3.	Paper size error	③
4.	Fusing unit error	④
5.	Fan error	⑤

① The printer does not work normally after being turned on.

• Turn the power off, then on.

• Is all 8s message displayed in the LCD display? [88888888 / 88888888]

• No Is the AC cable connected properly?

• No Connect the cable properly.

• Yes Is +5 V applied between pins 2 and 5 of CN5 on the control board (OLCW-).
Pin 2 : 0 V
Pin 5 : +5 V

Ⓐ

• No Is the connection between connector CN7 on the OLCW board (OLCW-) and connector CN3 on the Power supply board made properly?

No Make the connection properly.

• Yes Go to ①-1.

• Yes Is +8 V supplied?

• No Go to Ⓐ

• Yes Is the flexible cable for the operator panel assy connected to the connector CN5 on the control board (OLCW-) and the connector CN1 on the OLLD board properly?

• No Connect the flexible cable properly.

• Yes Replace the operator panel assy or flexible cable.

• Remedy?

• No Replace the control board (OLCW-).

• Yes End

• Yes Is [INITIAL-IZING] message displayed in the LCD display?

• No Replace the control board (OLCW-).

• Yes Is [ON-LINE HP IIP] message displayed in the LCD display?

• No Take action following the LCD message list.

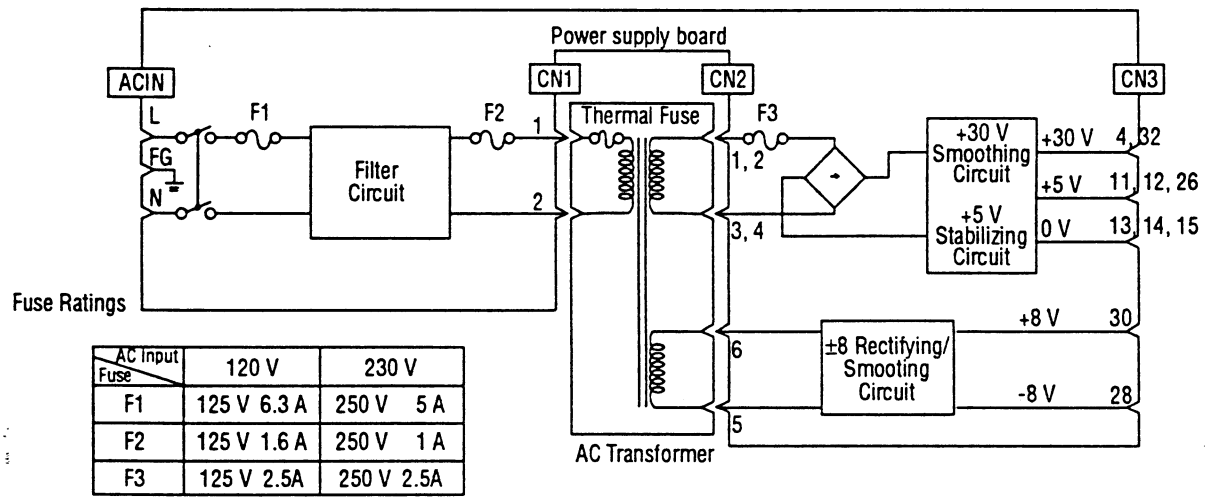
• Yes End

①-1

• Measure the following voltages at connector CN2 on the power supply board.

Voltage between pins 1 and 3: ... about 28 V AC
Voltage between pins 5 and 6: ... about 10 V AC Are the voltages normal?

- Yes Is fuse F3 on the power supply board blown?
  - No Replace the power supply board.
  - Yes Replace fuse F3. (If blows again, check a resistance of the resist and drum motors. If fail replace motors, or replace the power supply board or control board (OLCW-).)
- No Is the AC input voltage output between pins 1 and 2 of connector CN1 on the power supply board?
  - Yes Replace the AC transformer.
- No Is fuse F1 or F2 on the power supply board blown?
  - No Replace the Power supply board.
  - Yes Replace blown fuse F1 or F2. (If blows again, replace the power supply board.)



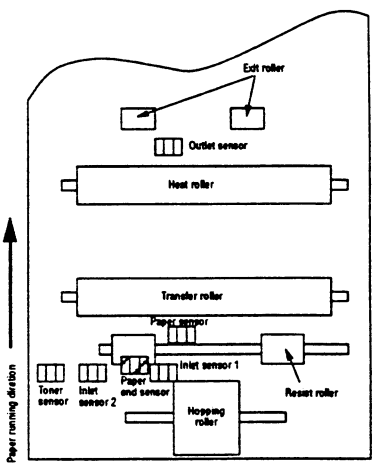
AC Input / Fuse	120 V	230 V
F1	125 V 6.3 A	250 V 5 A
F2	125 V 1.6 A	250 V 1 A
F3	125 V 2.5A	250 V 2.5A

Figure 6-1 Low-voltage Power Supply Block Diagram

[JAM error]

②-1 Paper input jam

- Does JAM error occur when the power is turned on?
  - Yes — Is the paper at the inlet sensor?
    - Yes — Remove the paper.
    - No — Is the operation of the inlet sensor lever normal?
      - No — Replace the inlet sensor lever.
      - Yes — Clean the inlet sensor on the power supply board, or replace the power supply board.
  - No — Does a JAM alarm occur after paper feeding?
    - Yes — Is the paper fed on the inlet sensor lever?
      - Yes — Is the operation of the input sensor lever normal?
        - No — Replace the inlet sensor lever.
        - Yes — Clean the inlet sensor on the power supply board or replace the power supply board.
      - No — Replace the hopping roller rubber or tray.
    - No — Is the hopping roller rotating?
      - Yes — Set the paper tray properly.
      - No — Is the resist motor rotating?
        - Yes — Replace the one-way clutch gear of the hopping roller assembly.
        - No — Is connector CN3 on the control board (OLCW-) connected properly?
          - No — Connect connector CN3 properly.
          - Yes — Is the coil resistance (normal resistance: about 32 Ω) of the resist motor normal? (Refer to 7.3)
            - No — Replace the resist motor.
            - Yes — Replace the control board (OLCW-).



②-2 Paper feed jam

- Does a paper feed jam occur when the power is turned on?
  - Yes — Is the paper on the paper sensor lever?
    - Yes — Remove the paper.
    - No — Is the operation of the paper sensor lever normal?
      - No — Replace the paper sensor lever.
      - Yes — Replace the power supply board.
  - No — Has the paper reached the paper sensor lever?
    - No — Is the resist roller rotating?
      - No — Replace the one-way clutch gear.
      - Yes — Is the image drum cartridge set properly?
        - No — Set the image drum cartridge properly?
        - Yes — Check the hopping roller assembly or tray.
  - Yes — Has the paper reached the outlet sensor lever?
    - Yes — Is the operation of the outlet sensor lever normal?
      - No — Replace the outlet sensor lever.
      - Yes — Clean the outlet sensor on the power supply board or replace the power supply board.
  - No — Is the drum motor rotating?
    - No — Is connector CN2 on the control board (OLCW-) connected?
      - No — Connect connector CN2 properly.
      - Yes — Is the coil resistance (normal resistance: about 32Ω) of the dram motor correct? (Refer to 7.3)
        - No — Replace the drum motor.

②-2-a ②-2-b

②-2-a ②-2-b

• Yes — Replace the control board (OLCW-).

• Yes — Is the transfer roller rotating?

• No — Check the gears. (TR gear, idle gear or reduction gear.)

• Yes — Is the fuser unit installed properly?

• No — Install the fuser unit properly.

• Yes — Is the image drum cartridge set properly?

• No — Set the image drum cartridge properly.

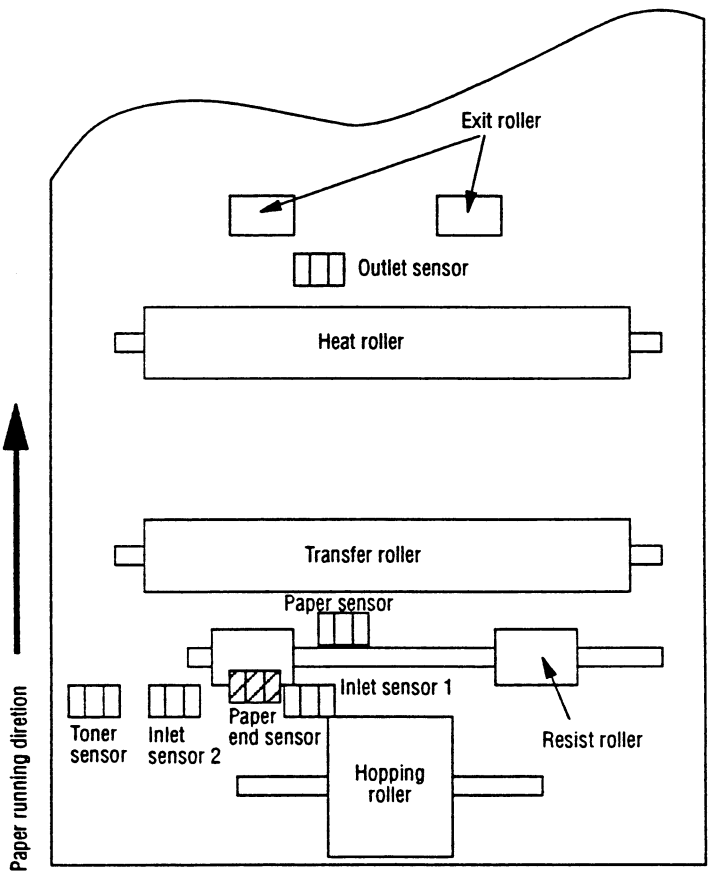
• Yes — Clean the write sensor on the power supply board or replace the power supply board.

②-3 Paper exit jam

- Does a paper exit jam error occur when the power is turned on?
  - Yes — Is the paper on the outlet sensor lever?
    - Yes — Remove the paper.
    - No — In the operation of the outlet sensor lever normal?
      - No — Replace the outlet sensor lever.
      - Yes — Clean the outlet sensor on the power supply board or replace the power supply board.
  - No — Is the face-up stacker drawn out completely from the printer or, is it pushed into the printer completely?
    - No — Draw the face-up stacker out of the printer completely or push it into the printer completely.
  - Yes — Is the eject roller assembly installed properly?
    - No — Install the eject roller assembly properly.
  - Yes — Has the coil spring come off from the eject roller assembly?
    - Yes — Install the coil spring to the eject roller assembly.
  - No — Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size used?
  - No — Use paper of the specified size.
- Yes — Do inlet sensor levers 1 and 2 operate properly?
  - No — Replace the inlet sensor lever or clean the inlet sensor on the power supply board.
- Yes — Does the outlet sensor lever operate properly?
  - No — Replace the outlet sensor lever or clean the outlet sensor on the power supply board.
- Yes — Replace the power supply board.



④ Fusing unit error (ERROR 71) (ERROR 72)

- Turn the power off, then on.
- Does a fusing unit error occur immediately?
  - Yes — Is the thermistor open or shorted? Measure the resistance between thermistor contacts. (about 220kΩ at room temperature). (Refer Fig. 6-2) or (See 7.3)
    - Yes — Replace the fusing unit.
  - No — Does the thermistor contact touch the contact assembly properly when the fusing unit is mounted in the printer? (Refer Fig. 6-4 contact Ⓕ.)
    - No — Adjust the contact.
    - Yes — Replace the control board (OLCW-) or power supply board.
- No — Does a fusing unit error occur about 60 seconds after the power is turned on.
  - No — Check the thermistor for poor contact or replace the control board (OLCW-).
- Yes — Turn the power off, then on.
- Is the heater of the fusing unit turned on? (When the heater is turned on, light is emitted.)
  - Yes — Check thermistor contact or replace the control board (OLCW-) or the fuser unit.
- No — Is the heater or the thermostat open? Measure the resistance between the heater contacts (normal resistance: about 0Ω). (Refer Fig. 6-2) or (See section 7.3)
  - Yes — Replace the fusing unit.
- No — Is the AC voltage supplied to the contacts for the heater of the contact assembly? (Refer Fig. 6-2)
  - No — Replace the control board (OLCW-) or the power supply board.
- Yes — Check the heat contact of the fusing unit and the contact assembly for poor contact. (Refer Fig. 6-4 contact Ⓖ.)

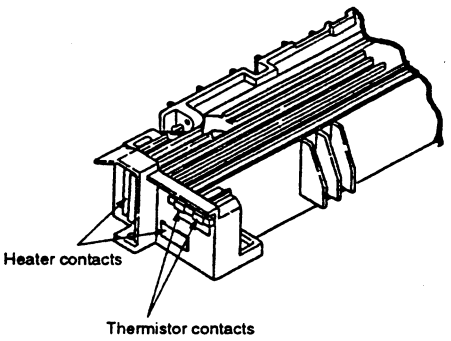


Fig. 6-2

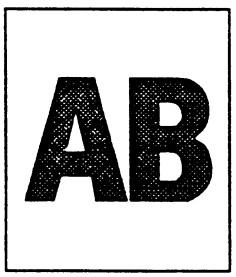
⑤ Fan error (ERROR 70)

- Is the fan rotating?
  - Yes: Replace the control board (OLCW-).
  - No: Is connector CN1 on the control board (OLCW-) connected?
    - No: Connect connector CN1.
    - Yes: Replace the fan or control board (OLCW-).
      (Check coil resistance of the fan. Refer section 7.3.)

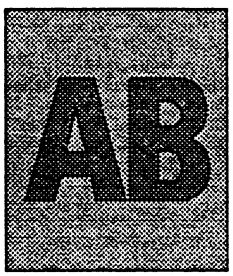
6.5.3 Image troubleshooting

Procedures for troubleshooting if abnormal images have been printed out are explained below. Figure 6-3 below shows typical abnormal images.

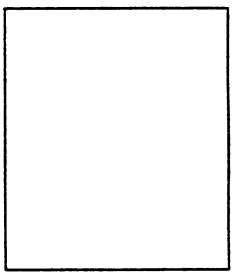
Trouble	Flowchart number
Images are light or blurred as a whole (Figure 6-3, Ⓐ)	①
Dark background density (Figure 6-3, Ⓑ)	②
Blank paper is output (Figure 6-3, Ⓒ)	③
Black stripes in the vertical direction (Figure 6-3, Ⓓ)	④
Cyclical defect (Figure 6-3, Ⓔ)	⑤
Print voids	⑥
Poor fusing (images are blurred or peeled off when touched by hands)	⑦
White streaks in the vertical direction (Figure 6-3, Ⓕ)	⑧



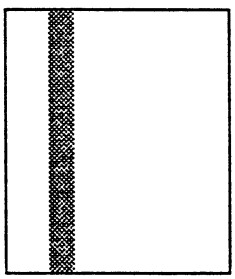
Ⓐ Light or blurred images as a whole



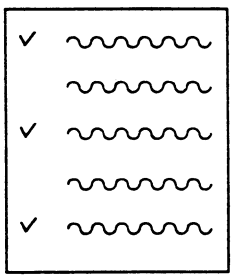
Ⓑ Dark background density



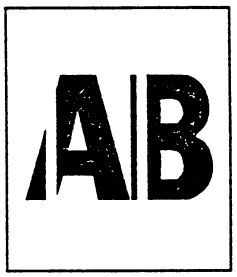
Ⓒ Blank paper



Ⓓ Black stripes in the vertical direction



Ⓔ Cyclical defect



Ⓕ White belts or streaks in the vertical direction

Figure 6-3

① Images are light or blurred as a whole.

• Is toner low? (Is the TONER LOW message displayed?)

• Yes Supply toner.

• No Is paper of the specified grade used?

• No Use paper of the specified grade.

• Yes Is the lens surface of the LED head dirty?

• Yes Clean the lens.

• No Is the LED head installed properly? (Check connector CN4 of the control board (OLCW-) and PC connector on the LED head for proper connection.)

• No Install the LED head properly.

• Yes Is the contact plate of the transfer roller contacted with the contact assembly of the power supply board properly? (See Figure 6-5.)

• Make the contact plate of the transfer roller contact with the power supply board and Shaft of the transfer roller properly.

• Yes Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartrige contacted with the contact assembly properly? (See Figure 6-4 Ⓐ and Ⓑ.)

• No Adjust the contacts of the developing and toner supply roller to contact the contact assembly properly.

• Yes Replace the transfer roller. (See 3.3.13.)

• Has the trouble been removed?

• Yes End

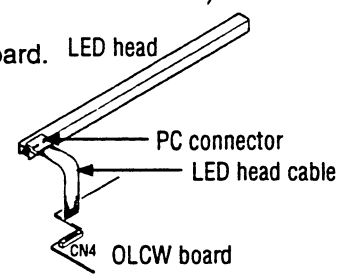
• No Replace the image drum cartridge.

• Has the trouble been removed?

• Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key and reset the drum counter. (Refer to User's Manual.)

• No Replace the control board (OLCW-) or power supply board.



② Dark background density

- Has the image drum been exposed to external light?
  - Yes — Mount the image drum in the printer and wait for about 30 minutes.
- No — Is the heat roller of the fusing unit dirty?
  - Yes — Clean the heat roller.
- No — Is the contact of the cleaning roller of the image drum cartridge contacted with the contact assembly properly? (See Figure 6-4 Ⓒ.)
  - No — Adjust the contact of the cleaning roller to contact the contact assembly properly.
- Yes — Replace the image drum cartridge,

- Has the trouble been removed?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)
- No — Replace the control board (OLCW-) or power supply board.

③ Blank paper is output.

- Is the LED head connected properly? (Check connector CN4 on the control board (OLCW-) and PC connector on the LED head.)
  - No — Connect the LED head properly or replace the head cable.
- Yes — Is the contact of the image drum cartrige contacted with the ground contact properly. (See Figure 6-4Ⓓ.)
  - No — Check the ground contact of the image drum cartridge.
- Yes — Replace the LED head.

- Has the trouble been removed.
  - Yes — End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)
- No — Replace the control board (OLCW-) or power supply board.

④ Black belts or stripes in the vertical direction

• Replace the image drum cartridge.

• Has the trouble been removed?

- Yes End

  Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

• No Replace the LED head.

• Has the trouble been removed.

- Yes End

  Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head druve time. (Refer to Section 4.2.)

• No Replace the control board (OLCW-) or power supply board.

⑤ Cyclic error

	Frequency	Remedy
Image drum	3.71" (94.2 mm)	Replace or clean the image drum cartridge.
Developing roller	1.66" (44.4 mm)	Replace the image drum cartridge.
Toner supply roller	2.27" (57.8 mm)	Replace the image drum cartridge.
Charging roller	1.56" (39.6 mm)	Replace the image drum cartridge.
Cleaning roller	1.24" (31.4 mm)	Replace the image drum cartridge.
Transfer roller	2.01" (51.0 mm)	Replace the transfer roller.
Heat roller	2.47" (62.8 mm)	Replace the fusing unit assy.
Back-up roller	2.23" (56.5 mm)	For the printers with a serial number up to and including S/N 303Axxxxx: Replace the back-up roller.
	2.72" (69.08 mm)	For the printers with a serial number S/N 304Axxxxx onward: Replace the back-up roller.

Notes:

1. After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

2 After replacing the fusing unit assy, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys, and reset the

⑥ Print voids

• Is the contact plate of the transfer roller contacted with the power supply board properly? (See Figure 6-5.)

  • No Adjust the contact plate contact to contact the power supply board properly and the shaft of the transfer roller.

• Yes Replace the transfer roller. (See 3.3.13.)

• Has the trouble been removed.

  • Yes End

• No Are the contacts of the toner supply roller, developing roller, image drum and charging roller contacted with the contact assy properly? (See Figure 6-4 Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ.)

  • No Adjust the contacts to contact the contact assy properly.

• Yes Replace the image drum cartridge.

• Has the trouble been removed?

  • Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

• No Is the LED head installed properly? (Check connector CN4 on the control board (OLCW-) and PC Connector on the LED head.)

  • No Install the LED head properly.

• Yes Replace the LED head or the head cable.

• Has the trouble been removed?

• Yes End

  Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)

• No Replace the control board (OLCW-) or power supply board.

⑦ Poor fusing

- Is paper of the specified grade used?
  - No — Use paper of the specified grade.
- Yes — Is the spring of the back-up roller normal?
  - No — Replace the spring.
- Yes — Is the contact of the fusing unit assy contacted with the contact assy properly? (See Figure 6-4 Ⓖ.)
  - No — Adjust the contact of the fusing unit assy to contact the contact assembly properly.
- Yes — Replace the fusing unit assy.
- Has the trouble been removed?
  - Yes — End
- No — Replace the control board (OLCW-) or power supply board.

⑧ White belts or streaks in the vertical direction

- Are the LED lens dirty?
  - Yes — Clean the LED lens.
- No — Is the contact plate of the transfer roller contacted with the power supply board properly? (See Figure 6-5.)
  - No — Make the contact plate contact with the power supply board properly.
- Yes — Replace the transfer roller. (See 3.3.13.)

- Has the trouble been removed?
  - Yes — End
- No — Is the LED head installed properly? (Cleck CN4 connector on the control board (OLCW-) and PC connector on the LED head.)
  - No — Install the LED head properly.
- Yes — Replace the LED head.

- Has the trouble been removed?
  - Yes — End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time. (Refer to Section 4.2.)
- Yes — Replace the image drum cartridge.

- Has the trouble been removed?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter. (Refer to User's Manual.)
- No Replace the control board (OLCW-) or power supply board.

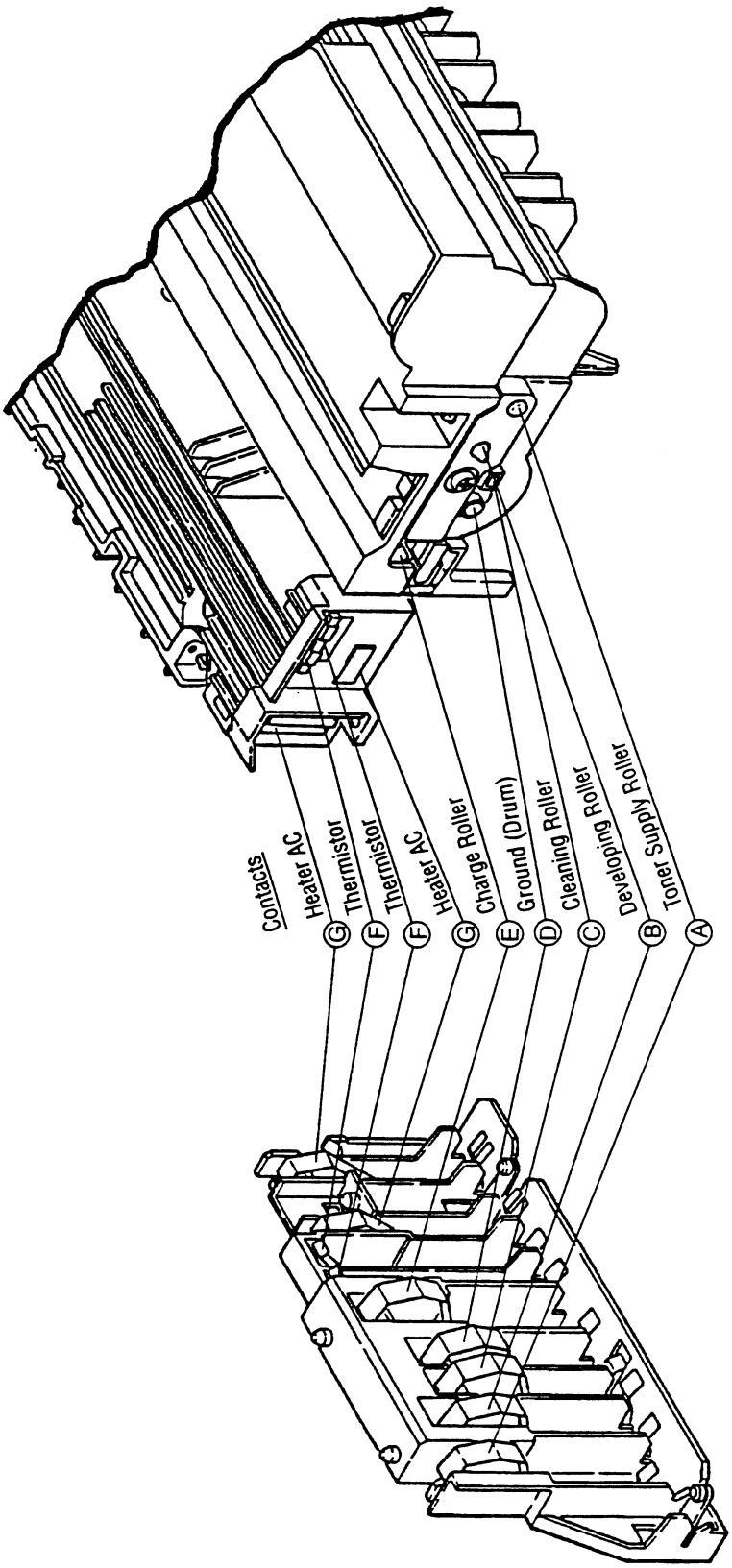

Contacts
Heater AC
Thermistor
Thermistor
Heater AC
Charge Roller
Ground (Drum)
Cleaning Roller
Developing Roller
Toner Supply Roller
G
F
F
G
E
D
C
B
A

Figure 6-4

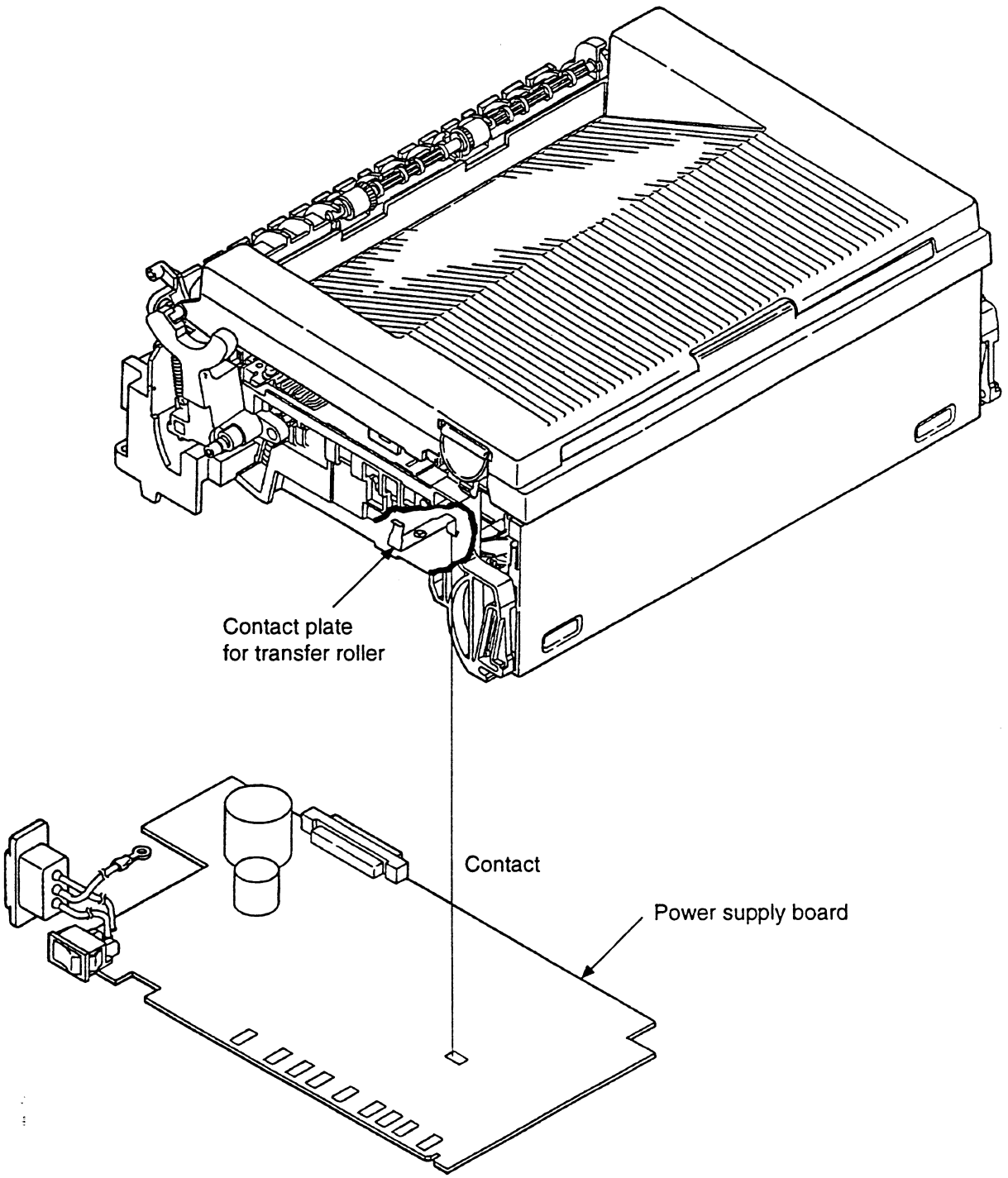
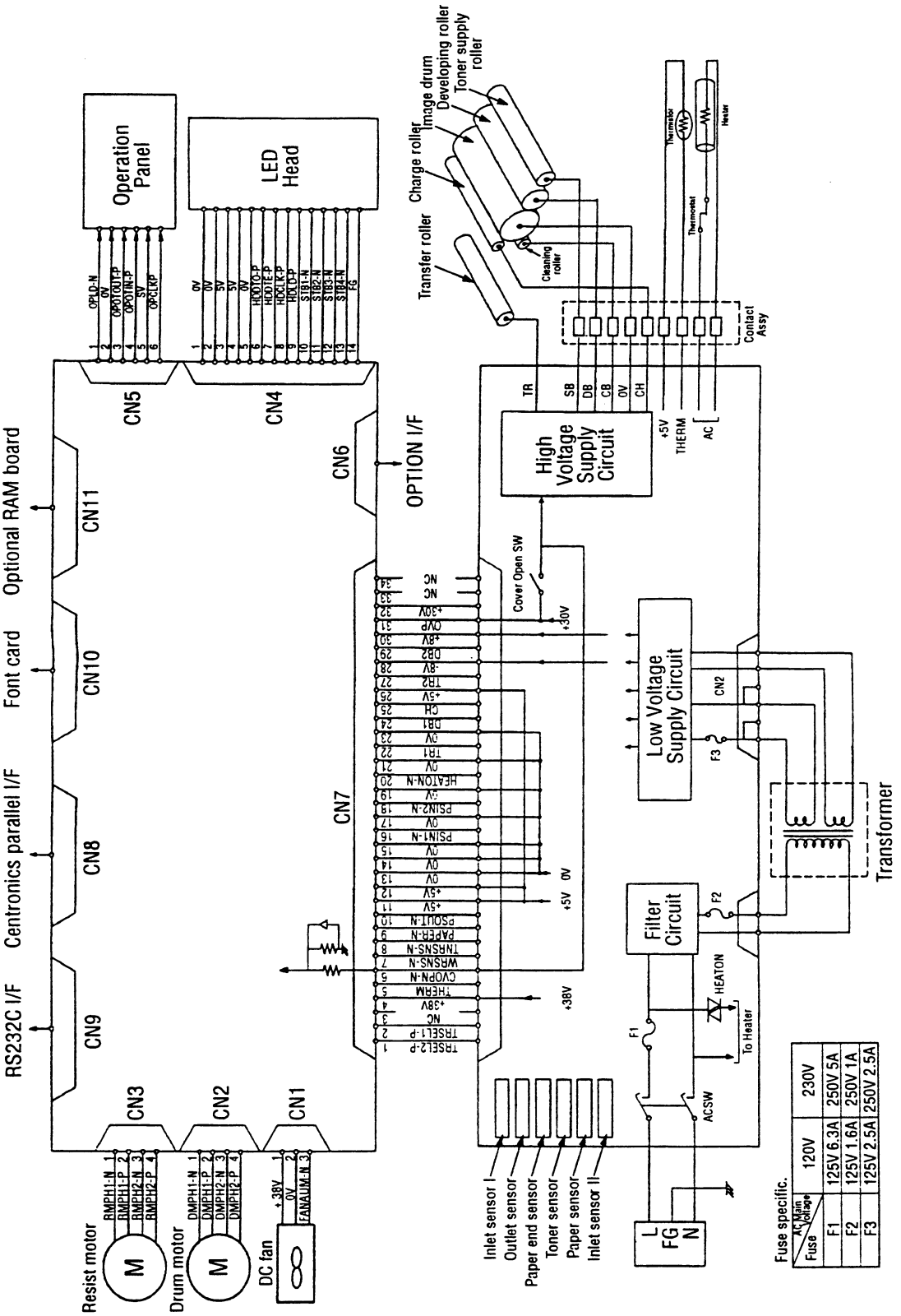

Contact plate
for transfer roller
Contact
Power supply board

Figure 6-5

7. WIRING DIAGRAM

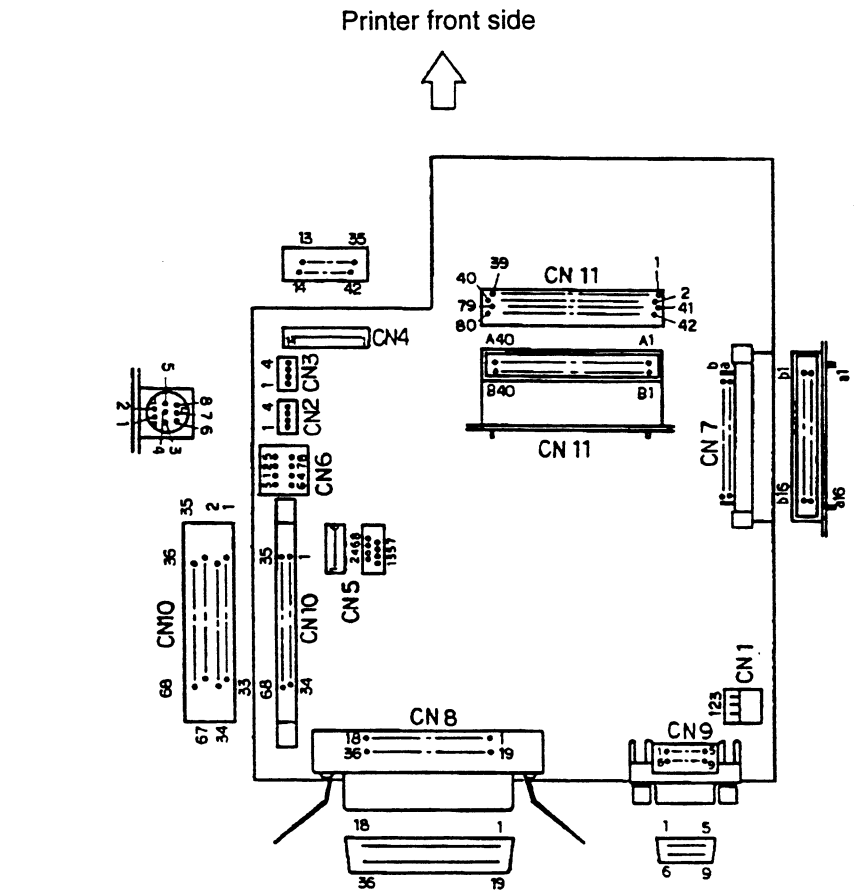
7. WIRING DIAGRAM

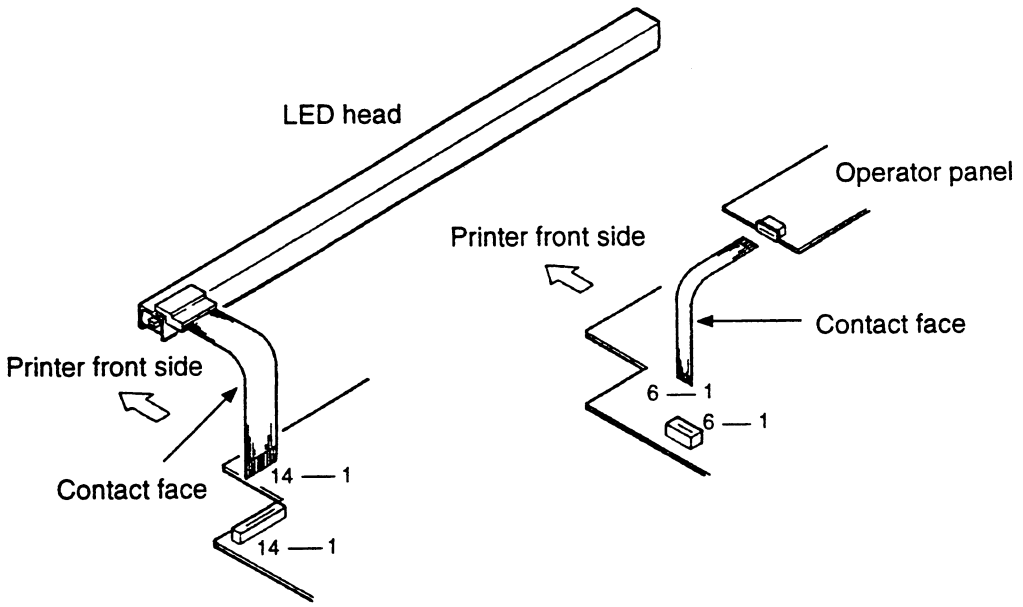
7.1 Interconnect Signal Diagram



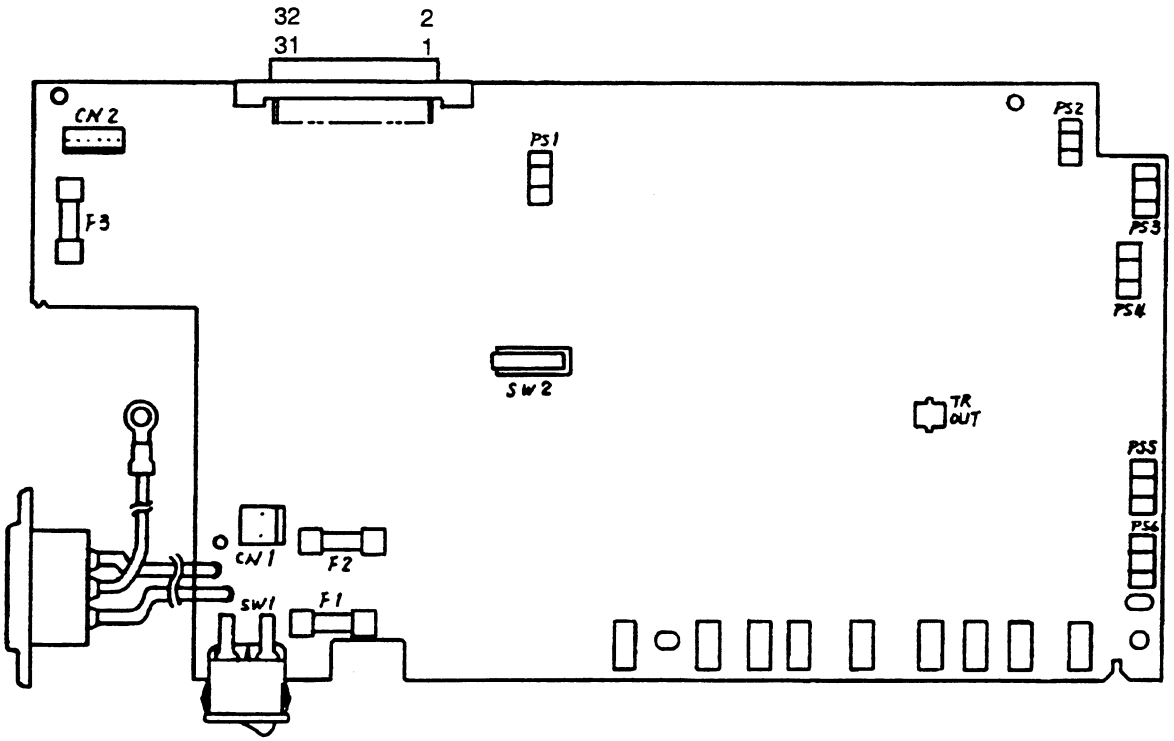
7.2 PCB Layout and Connector Signal List

(1) Control board (OLCW-)





(2) Power supply board (OLAA-)



- CN1 pin assignment
  To Fan motor

Opening

	Pin No.	I/O	Signal	Description
1	1	O	FANPOW	Power supply for driving fan
2	2	C	0V	Ground
3	3	I	FANALM-N	Fan alarm

- CN2 pin assignment
  To Drum motor

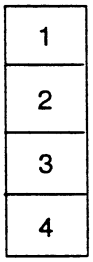
	Pin No.	I/O	Signal	Description
1	1	O	DMPH1-N	Coil 1-N
2	2	O	DMPH1-P	Coil 1-P
3	3	O	DMPH2-N	Coil 2-N
4	4	O	DMPH2-P	Coil 2-P

Excitation sequence

Pin No.	Lead color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Rotary direction Clockwise wiewed from the output axis.

- CN3 pin assignment
  To Regist motor



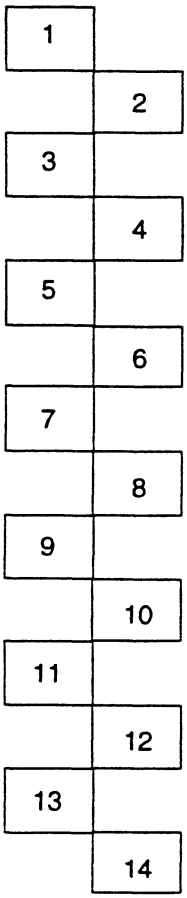
Pin No.	I/O	Signal	Description
1	O	RMPH1-N	Coil 1-N
2	O	RMPH1-P	Coil 1-P
3	O	RMPH2-N	Coil 2-N
4	O	RMPH2-P	Coil 2-P

Excitation sequence

Pin No.	Lead color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

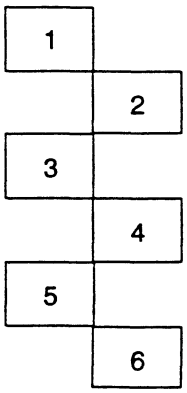
Rotary direction Clockwise wiewed from the output axis.

- CN4 pin assignment
  To LEDhead



Pin No.	I/O	Signal	Description
1	C	0V	Ground for LED
2	C	0V	Ground for LED
3	O	5V	+5V power supply for driving LEDs
4	O	5V	+5V power supply for driving LED
5	C	0V	Logic ground
6	O	HDDTO-P	Odd data
7	O	NC	Not used
8	O	HDCLK-P	Clock
9	O	HDLD-P	Load
10	O	STB1-N	Strobe 1
11	O	STB2-N	Strobe 2
12	O	STB3-N	Strobe 3
13	O	STB4-N	Strobe 4
14	C	FG	FG

- CN5 pin assignment
  To Operator panel



Pin No.	I/O	Signal	Description
1	O	OPLD-N	Load
2	C	0V	Logic groud
3	I	OPDTOUT-P	Data output
4	O	OPDTIN-P	Data input
5	C	5V	+5V power supply
6	O	OPCLK-N	Clock

- CN6 pin assignment
  To Option feeder

5	8
2	7
1	4
3	6

Pin No.	I/O	Signal	Description
1	O	OPTPSIN-N	
2	O	OPTSCLK-N	Clock output
3	C	OPTSD-P	
4	I	OPTSDR-N	OPT
5	C	0VP	Analog ground
6	O	30V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

- CN7 pin assignment
  To power supply board

2	1
4	3
6	5
8	7
10	9
12	11
14	13
16	15
18	17
20	19
22	21
24	23
26	25
28	27
30	29
32	31

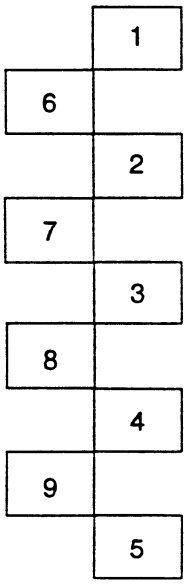
Pin No.	Signal	I/O	Description	Pin No.	Signal	I/O	Description
2 (b01)	TRSEL1-P	O	TR control switch 1	1 (a01)	TRSEL2-F	O	TR control switch 2
4 (b02)	+30V	I	+30V power supply	3 (a02)	NC		
6 (b03)	CVOPN-N	I	Cover open (+30V)	5 (a03)	THERM	I	Heater temperature
8 (b04)	TRSNS-N	I	Toner sence 1	7 (a04)	WRSNS-N	I	Write sensor
10 (b05)	PSOUT-N	I	Paper sense (output)	9 (a05)	PAPER-N	I	Paper end
12 (b06)	+5V	I	+5V power supply	11 (a06)	+5V	I	+5V power supply
14 (b07)	0V	C	Logic ground	13 (a07)	0V	C	Logic ground
16 (b08)	PSIN1-N	I	Paper sense 1 (input)	15 (a08)	0V	C	Logic ground
18 (b09)	PSIN2-N	I	Paper sense 2 (broad width)	17 (a09)	0V	C	Logic ground
20 (b10)	HEATON-N	O	Heater on	19 (a10)	0V	C	Logic ground
22 (b11)	R1-P	O	TR on (+ output)	21 (a11)	0V	C	Logic ground
24 (b12)	DON1-P	O	DB/SB on (+ output)	23 (a12)	0V	C	Logic ground
26 (b13)	+5	I	+5V power supply	25 (a13)	CH-P	O	Charge on
28 (b14)	-8V	I	-8V power supply	27 (a14)	TR2-P	O	TR on (- output)
30 (b15)	+8V	I	+8V power supply	29 (a15)	DBON2-P	O	DB/SB on (- output)
32 (b16)	+30V	I	+30V power supply	31 (a16)	0VP	C	Analog ground

- CN8 pin assignment
  CENTRO PARALLEL

1	19
2	20
3	21
4	22
5	23
6	24
7	25
8	26
9	27
10	28
11	29
12	30
13	31
14	32
15	33
16	34
17	35
18	36

Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
1	I	STROBE-N	Strobe	19	C	SG	Ground
2	C	DATA1-P	Data bit 0	20	C	SG	Ground
3	C	DATA2-P	Data bit 1	21	C	SG	Ground
4	C	DATA3-P	Data bit 2	22	C	SG	Ground
5	C	DATA4-P	Data bit 3	23	C	SG	Ground
6	C	DATA5-P	Data bit 4	24	C	SG	Ground
7	C	DATA6-P	Data bit 5	25	C	SG	Ground
8	C	DATA7-P	Data bit 6	26	C	SG	Ground
9	C	DATA8-P	Data bit 7	27	C	SG	Ground
10	O	ACK-N	Acknowledge	28	C	SG	Ground
11	O	BUSY-P	Busy	29	C	SG	Ground
12	O	PE-P	paper end	30	C	SG	Ground
13	O	SEL-P	Select	31	I	IPRIME-N	Input prime
14	I	AUTOFEED-N	Auto feed	32	O	FAULT-N	Fault
15		NC		33	C	SG	Ground
16	C	SG	Ground	34		NC	
17	C	FG		35	O	HILEVEL	Always kept high level
18	O	5V	+5V power supply	36	I	SELIN-N	Select in

- CN9 pin assignment
  RS232C

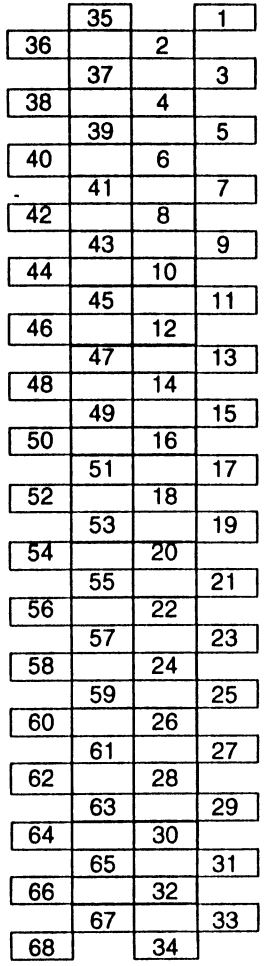


Pin No.	I/O	Signal	Description
1		CD	Connected to 0V via the resistance (5.6K)
2	I	RxD	Receive data
3	O	TxD	Send data
4	O	DTR	Data terminal ready
5	C	SG	Ground
6	I	DSR	Connected to 0V via the resistance (5.6K)
7	O	RTS	Request to send
8	I	CTS	Connected to 0V via the resistance (5.6K)
9		NC	

Note: Cross connection is applied to the host system side.

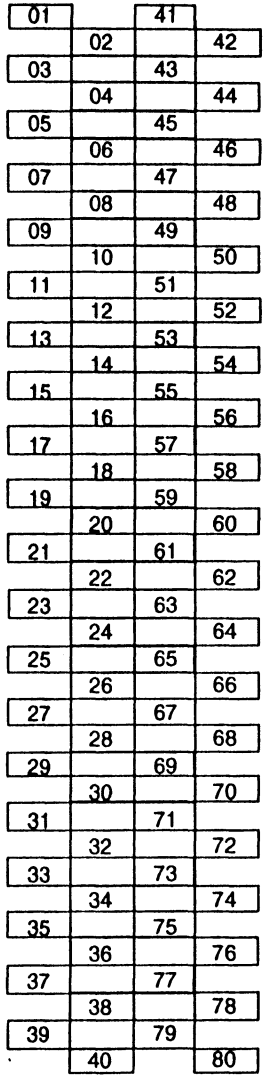
Host (9 male pin)		Printer (female pin)	
(I) CD	1	1	CD (I)
(I) RxD	2	2	RxD (I)
(O) TxD	3	3	TxD (O)
(O) DTR	4	4	DTR (O)
SG	5	5	SG
(I) DSR	6	6	DSR (I)
(O) RTS	7	7	RTS (O)
(I)CTS	8	8	CTS (I)
(I)RI	9	9	NC

- CN10 pin assignment
  To font card

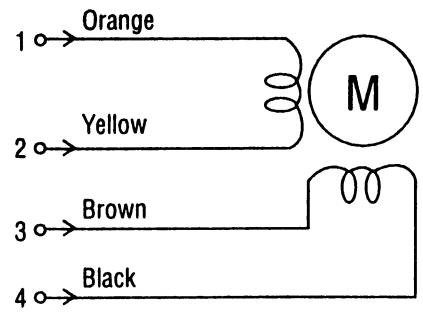
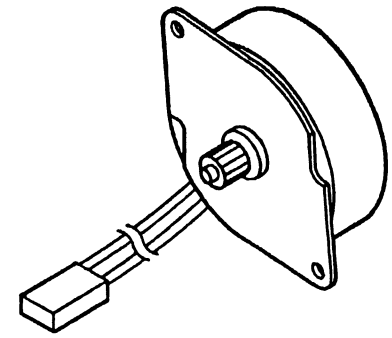
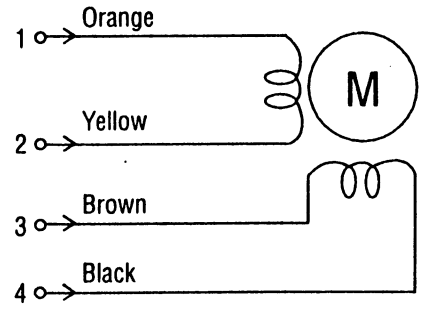
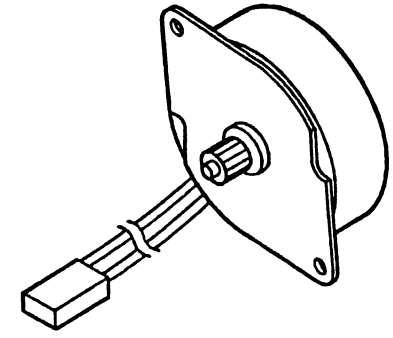
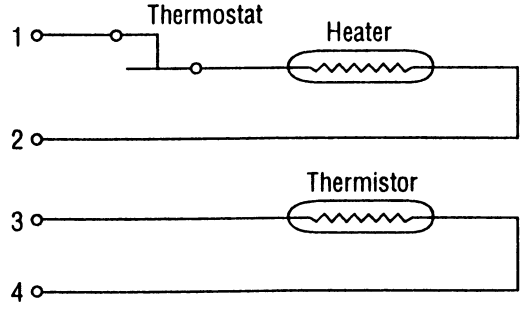
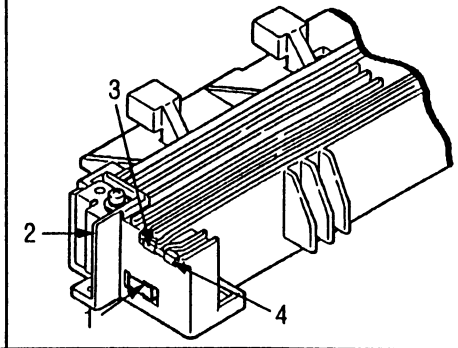


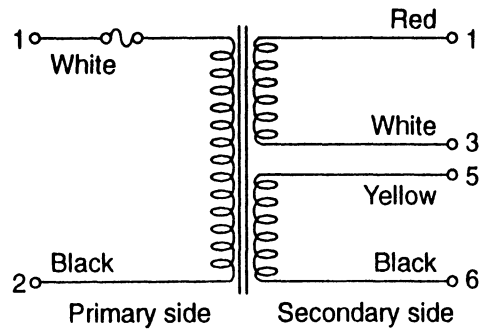
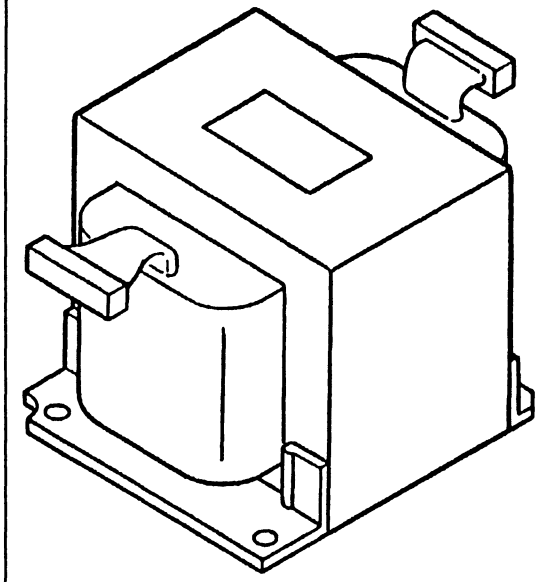
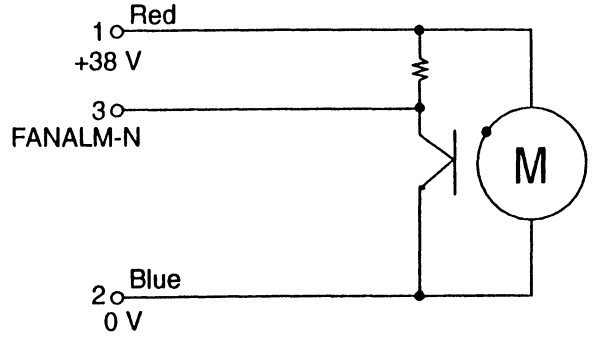
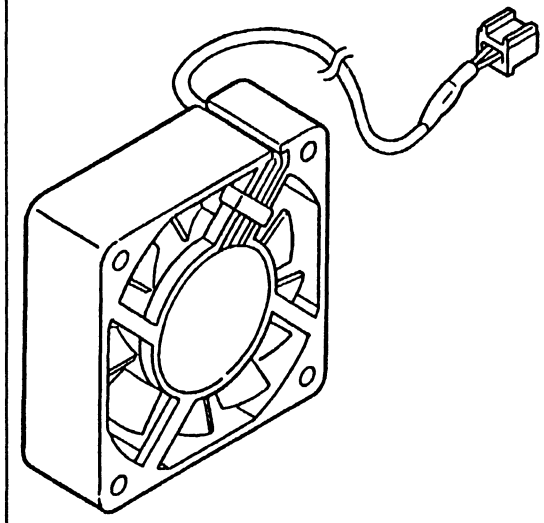
Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
1	C	GND	Ground	35	C	GND	Ground
2	C	D03-P	Data bit 3	36	I	CD1-N	Card detection
3	C	D04-P	Data bit 4	37	C	D11-P	Data bit 11
4	C	D05-P	Data bit 5	38	C	D12-P	Data bit 12
5	C	D06-P	Data bit 6	39	C	D13-P	Data bit 13
6	C	D07-P	Data bit 7	40	C	D14-P	Data bit 14
7	O	CE1-N	Card enable	41	C	D15-P	Data bit 15
8	O	A10-P	Address bit 10	42	O	CE2-N	Card enable
9	O	OE-N	Output enable	43	O	RFSH-N	Not connected
10	O	A11-P	Address bit 11	44		RFU	Not connected
11	O	A09-P	Address bit 9	45		RFU	Not Connected
12	O	A08-P	Address bit 8	46	O	A17-P	Address bit 17
13	O	A13-P	Address bit 13	47	O	A18-P	Address bit 18
14	O	A14-P	Address bit 14	48	O	A19-P	Address bit 19
15	O	WE-N/PGM-N	Write enable	49	O	A20-P	Address bit 20
16	I	RDY/BSY-N	Not connected	50	O	A21-P	Address bit 21
17	O	VCC	+5V power supply	51	O	VCC	+5V power supply
18	O	VPP1	Not connected	52	O	VPP2	Not connected
19	O	A16-P	Address bit 16	53	O	A22-P	Address bit 22
20	O	A15-P	Address bit 15	54	O	A23-P	Address bit 23
21	O	A12-P	Address bit 12	55	O	A24-P	Address bit 24
22	O	A07-P	Address bit 7	56	O	A25-P	Address bit 25
23	O	A06-P	Address bit 6	57		RFU	Not connected
24	O	A05-P	Address bit 5	58		RFU	Not connected
25	O	A04-P	Address bit 4	59		RFU	Not connected
26	O	A03-P	Address bit 3	60		RFU	Not connected
27	O	A02-P	Address bit 2	61	O	REG-N	Selection of atribute memory
28	O	A01-P	Address bit 1	62	I	BVD2	Pull-up to +5V
29	O	A00-P	Not connected	63	I	BVD1	Pull-up to +5V
30	C	D00-P	Data bit 0	64	C	D08-P	Data bit 8
31	C	D01-P	Data bit 1	65	C	D09-P	Data bit 9
32	C	D02-P	Data bit 2	66	C	D10-P	Data bit 10
33	I	WP-P	Not connected	67	I	CD2-N	Card detection
34	C	GND	Ground	68		GND	Ground

- CN11 pin assignment
  To option board



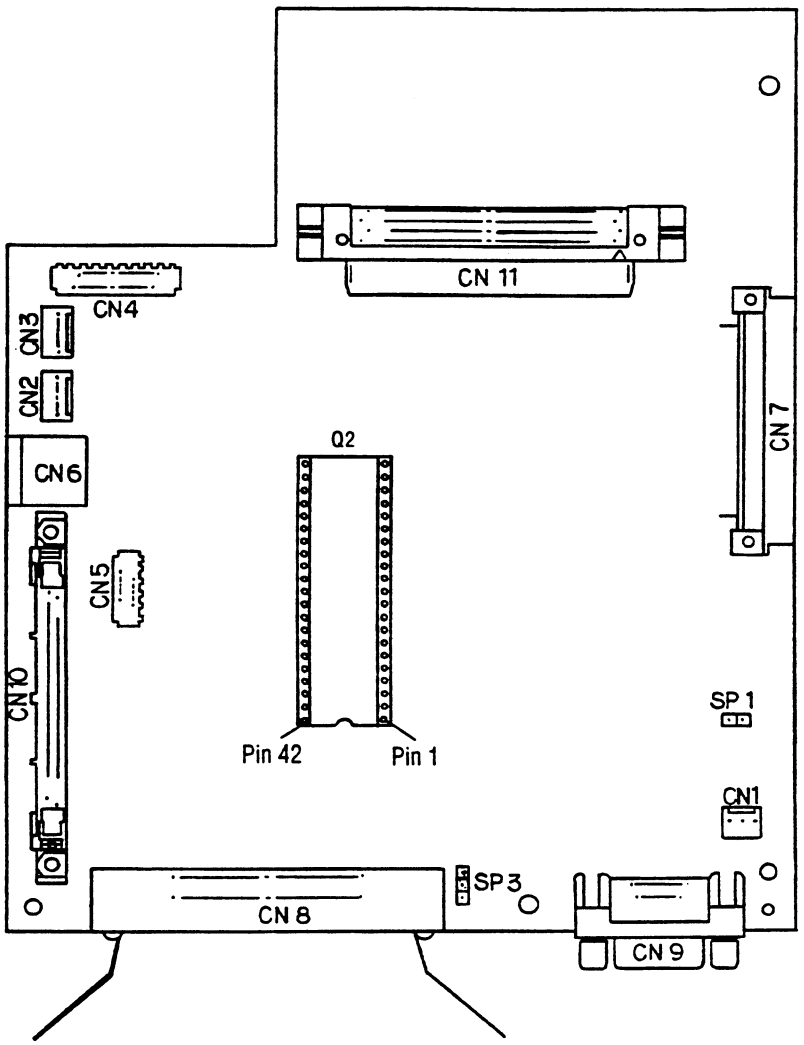
Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
01	O	-8V	-8V power supply	41	O	0V	Logic ground
02	C	0V	Logic ground	42		0V	Logic ground
03		0V	Logic ground	43	C	SSTXD-P	EEPROM data
04	I	NC		44	O	EEPRMCLK-P	EEPROM clock
05	O	NC		45	O	EEPRMCS1-P	EEPROM select
06		0V	Logic ground	46	O	+5V	+5V power supply
07		0V	Logic ground	47	I	INT2-N	Interrupt request 2
08	I	INT1-N	Interrupt request 1	48	O	IOS1-N	I/O select 1
09	O	IOS0-N	I/O select 0	49	O	CS3-N	ROM/SRAM select 3
10	O	CS2-N	ROM/SRAM select 2	50	I	BREO-N	Bus request
11	O	BGNT-P	Bus grant	51	O	NC	
12	I	DRDY-N	Data read	52	O	RESET-N	Reset signal
13	I	SCSREO-P	SCC receive request	53		NC	
14	I	SCRREO-P	SCC send request	54		NC	
15	O	A08-P	Address bit 8	55	O	A07-P	Address bit 7
16	O	A06-P	Address bit 6	56	O	A05-P	Address bit 5
17	O	A04-P	Address bit 4	57	O	A03-P	Address bit 3
18	O	A02-P	Address bit 2	58	O	A01-P	Address bit 1
19	O	A00-P/ORE-N	OR write enable	59	O	A21-P	Address bit 21
20	O	A20-P	Address bit 20	60	O	A19-P	Address bit 19
21	O	A17-P	Address bit 17	61	O	DCAS0-N	DCAS0
22	O	DCAS1-N	DCAS1	62	O	RD-N	RD-N
23	O	A18-P	Address bit 18	63	O	A16-P	Address bit 16
24	O	A15-P	Address bit 15	64	O	A14-P	Address bit 14
25	O	A13-P	Address bit 13	65	C	0V	Logic ground
26	O	+5V	+5V power supply	66	O	A12-P	Address bit 12
27	O	A11-P	Address bit 11	67	O	A10-P	Address bit 10
28	O	A09-P	Address bit 9	68	O	WR-N	WR-N
29	O	DRAS2-N	DRAM select 2	69	O	DRAS3-N	DRAM select 3
30	C	DRAN4-N	DRAM select 4	70	O	DRAS5-N	DRAM select 5
31	C	D07-P	Data bit 7	71	C	D06-P	Data bit 6
32	C	D05-P	Data bit 5	72	C	D04-P	Data bit 4
33	C	D02-P	Data bit 2	73	C	D03-P	Data bit 3
34	C	D00-P	Data bit 0	74	C	D01-P	Data bit 1
35		0V	Logic ground	75		+5V	+5V power supply
36	C	D14-P	Data bit 14	76	C	D15-P	Data bit 15
37	C	D12-P	Data bit 12	77	C	D13-P	Data bit 13
38	C	D11-P	Data bit 11	78	C	D10-P	Data bit 10
39	C	D09-P	Data bit 9	79	C	D08-P	Data bit 8
40	I	OPTION-N	Option board detection	80		0V	Logic ground

Unit	Circuit Diagram	Illustration	Resistance
Resist motor			Between pins 1 and 2: 32Ω Between pins 3 and 4: 32Ω
Drum motor			Between pins 1 and 2: 32Ω Between pins 3 and 4: 32Ω
Fusing Unit			Between pins 1 and 2: 120V 3Ω 240V 10Ω Between pins 3 and 4: 220KΩ (at room temperature)

Unit	Circuit Diagram	Illustration	Resistance
Transformer			Primary side Between pins 1 and 2: 56.8Ω (OEL) 14.8Ω (ODA) Secondary side Between pins 1 and 3: 1.3Ω Between pins 5 and 6: 1.2Ω
Fan			Between pins 1 and 2: 670Ω

7.4 Short Plug Setting

(1) Control board (OLCW-)

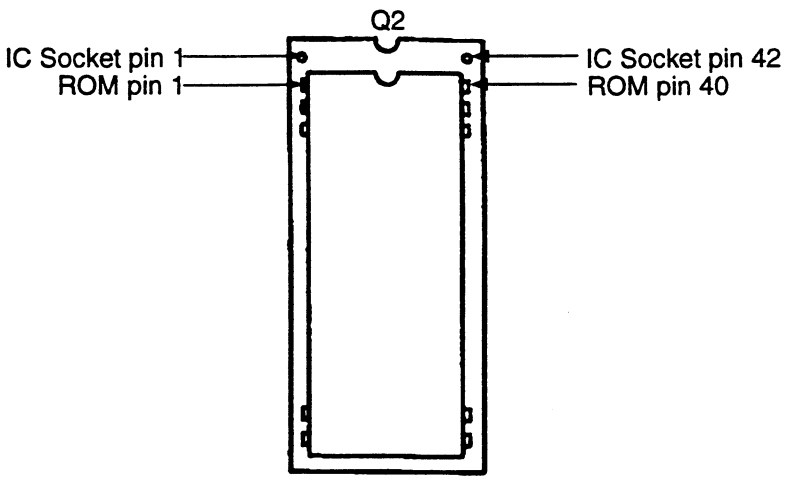


- Short plug settings

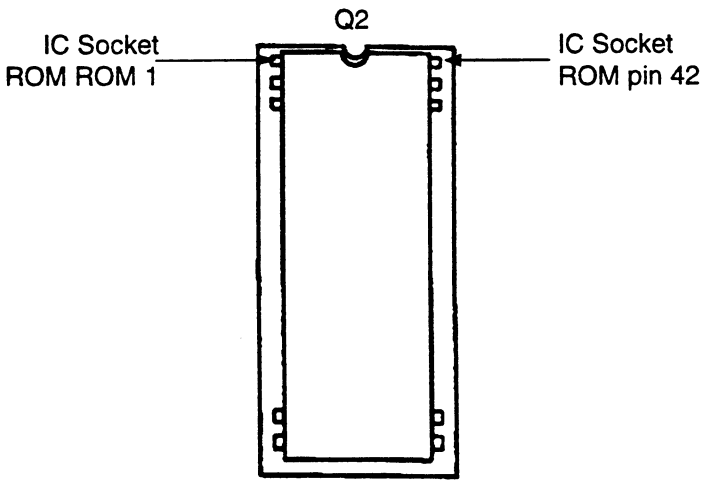
Short plug	Plug setting	Description	Factory setting
SP1	Provided	Debug mode	Not Provided
	Not provided	Normal	
SP3	A	+5 V is supplied to pin 18 of Centronics parallel I/F connector.	Aside
	B	+5 V is not supplied to pin 18 Centronics parallel I/F connector.	

- ROM mounting method

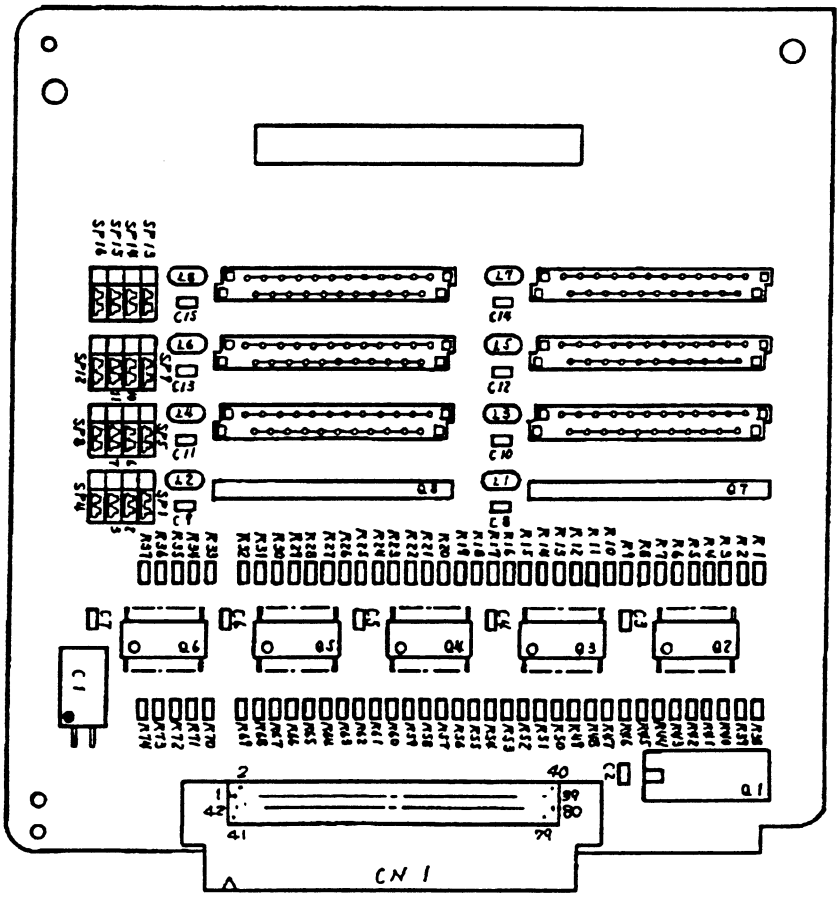
  a. 4 Mbits EEPROM ROM and Mask ROM



  b. 8 Mbits Mask ROM



(2) Optional RAM board (OLCW-)



The expansion memory capacity of the standard board is 1 Megabytes (4 Mbit D-RAM x 2 pcs).
This capacity can be expanded to up to 16 Megabytes using 16 Mbit D-RAMs.

RAM stack	RAM socket location	RAM chip type	Short plug setting				Expansion memory size
			SP1~SP4	SP5~SP8	SP9~SP12	SP13~SP16	
#1	Q7, Q8	4 MB D-RAM	A	X	X	X	1 MByte
		16 MB D-RAM	B	X	X	X	4 MBytes
#2	Q13, Q14	4 MB D-RAM	X	X	X	A	1 MByte
		16 MB D-RAM	X	X	X	B	4 MBytes
#3	Q11, Q12	4 MB D-RAM	X	X	A	X	1 MByte
		16 MB D-RAM	X	X	B	X	4 MBytes
#4	Q9, Q10	4 MB D-RAM	X	A	X	X	1 MByte
		16 MB D-RAM	X	B	X	X	4 MBytes

Note: Each stack uses a pair of RAM chips, so that the same type of RAM should be installed in the same stack.

8. PARTS LIST

8. PARTS LIST

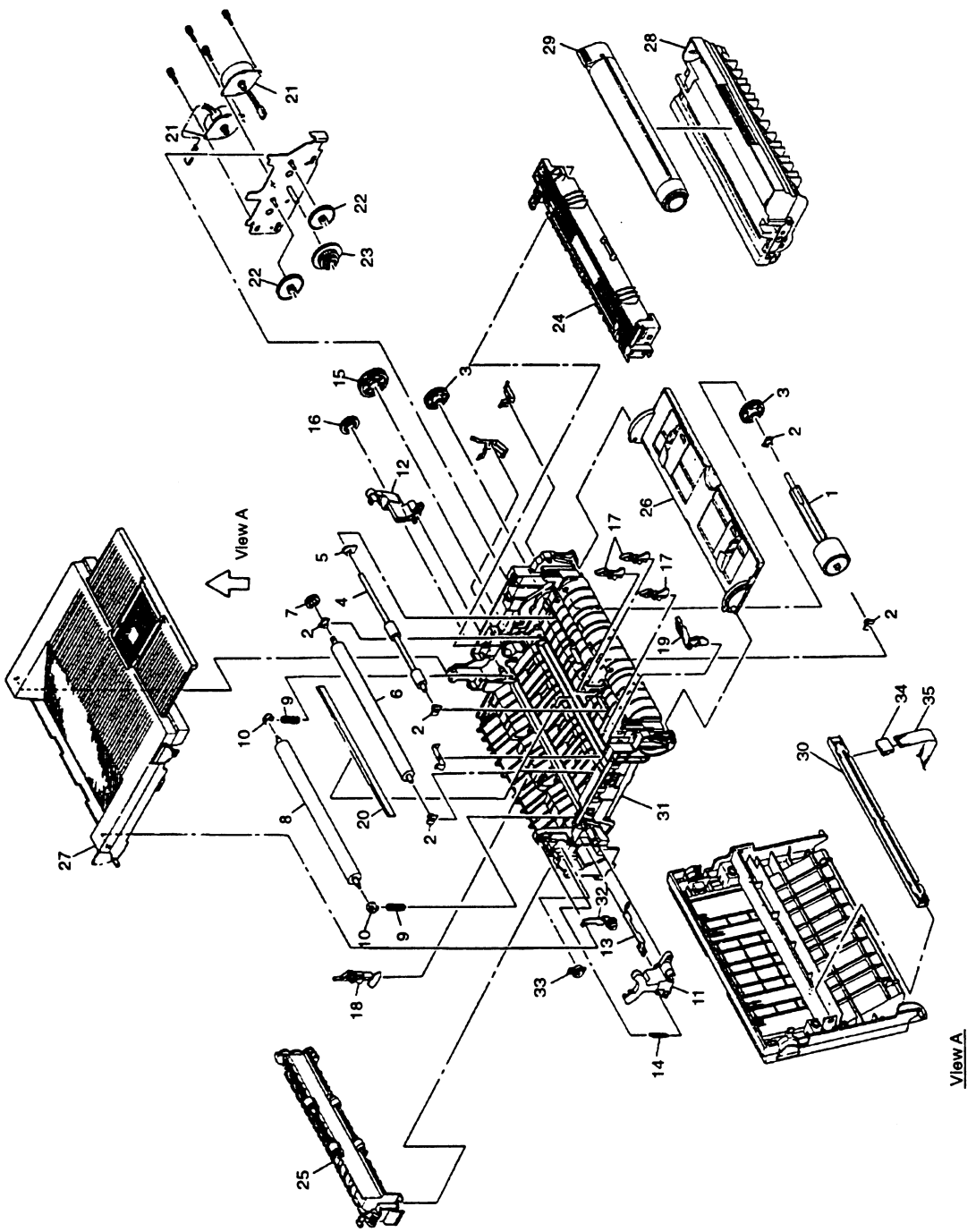


Figure 8-1 Lower base unit

Table 8-1 Lower base unit

No.	Name/Rating	Parts No.	Q'ty	Remarks
1	Hopping roller shaft assy	3PA4083-6019G1	1	
2	Bearing	4PP4083-6022P2	5	
3	One-way clutch gear	4PB4083-6024P1	2	
4	Resist roller	3PB4083-6030P1	1	
5	Bearing (Resist)	4PP4083-6031P1	1	
6	Transfer roller	4YB4083-6040P1	1	
7	TR gear	4PP4083-6042P1	1	
8	Back-up roller	3PB4083-6050P1 3PB4083-6064P1	1	Use for Products before S/N 303Axxxxx. Use for Products S/N 304Axxxxx and after.
9	Bias spring	4PP4083-6051P1 4PP4083-6065P1	2	Use for Products before S/N 303Axxxxx. Use for Products S/N 304Axxxxx and after.
10	Bush	4PP4083-6052P1	2	
11	Reset lever L	3PK4083-6810P1 3PP4083-6053P1	1	Use for Products before S/N 303Axxxxx. Use for Products S/N 304Axxxxx and after.
12	Reset lever R	3PK4083-6811P1 3PP4083-6054P1	1	Use for Products before S/N 303Axxxxx. Use for Products S/N 304Axxxxx and after.
13	Switch arm	3PP4083-6058P1	1	
14	Reset spring	4PP4083-6057P1	1	
15	Idle gear	4PP4083-6080P1	1	
16	Idle gear	4PP4083-6081P1	1	
17	Sensor plate (inlet, paper)	4PP4083-6083P1	3	
18	Sensor plate (outlet)	4PP4083-6085P1	1	
19	Toner sensor (adhesion)	4PP4083-6086G1	1	
20	Diselectrification bar	4PB4083-3182P3	1	
21	Pulse motor	4PB4083-6075P1	2	
22	Idle gear A	4PP4083-2593P1	2	
23	Reduction gear	3PP4083-6076P1	1	
24	Fusing unit (230V)	2YX4083-6100G2	1	Note:
25	Eject roller assy	2PA4083-6120G1	1	
26	Manual feed guide assy	2PA4083-6130G1	1	
27	Stacker cover assy	2PA4083-6160G1	1	
28	I/D unit	4YA4083-6300G3	1	Consumable
29	Toner cartridge	4YA4083-6400G3	1	Consumable
30	LED head	4YA4116-1104G1	1	

No.	Name/Rating	Parts No.	Q'ty	Remarks
31	Lower base	2PP4083-6801G1	1	
32	Dumper arm (caulking)	4PP4083-6191G1	1	
33	Dumper	4PB4083-6197P1	1	
34	PC connector	224A1286P0140	1	
35	Flexible cable (LED head)	4YX4121-1025G1	1	

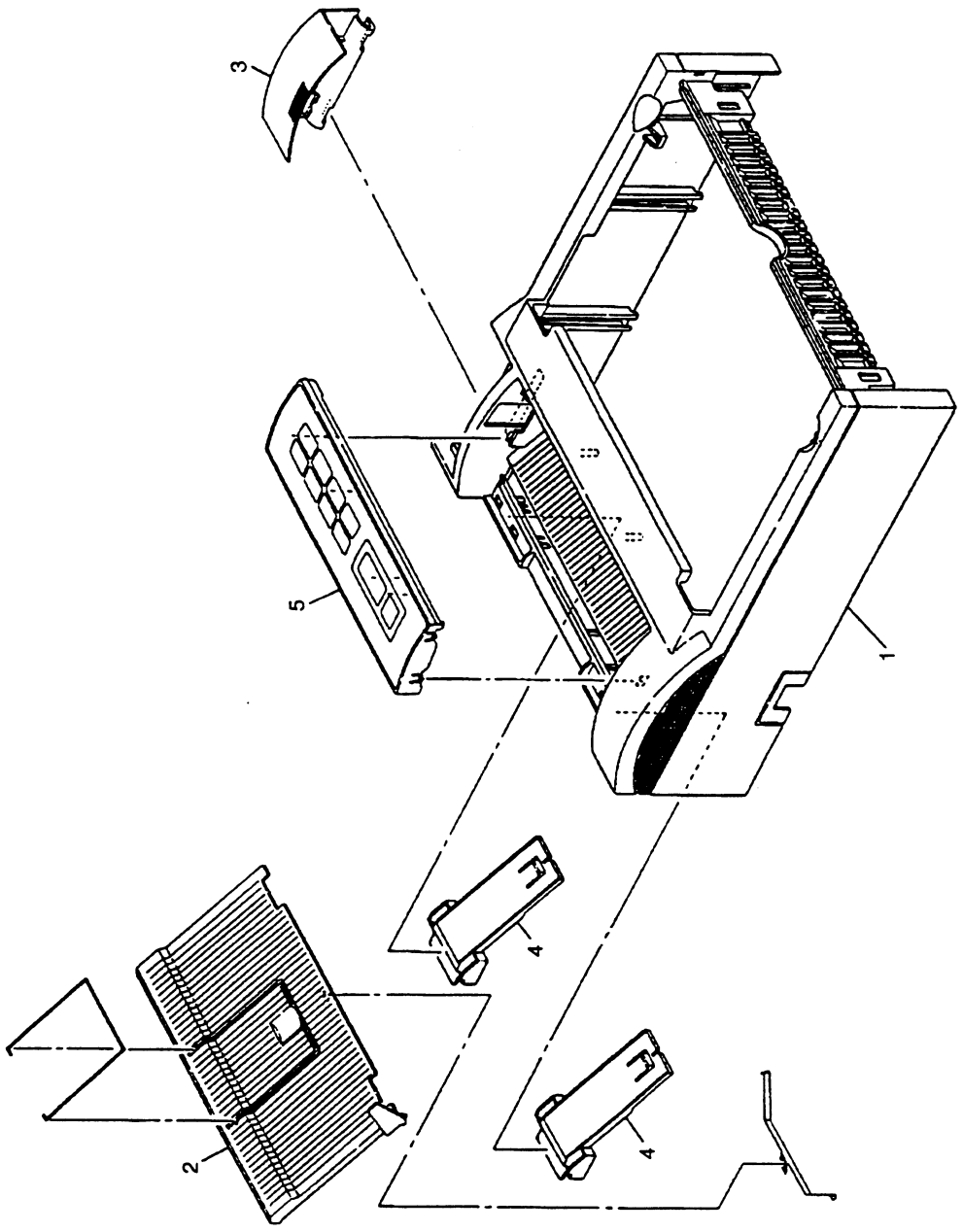


Figure 8-2 Upper cover unit

Table 8-2 Upper cover unit

No.	Name/Rating	Parts No.	Q'ty	Remarks
1	Upper cover	2PP4083-6808G1	1	
2	Stacker	1PP4094-7814P1	1	
3	Font card cover	2PP4094-7815P1	1	
4	Stacker clamp	3PP4094-7816P1	2	
5	Operator panel assy	4YA4083-6804G2	1	

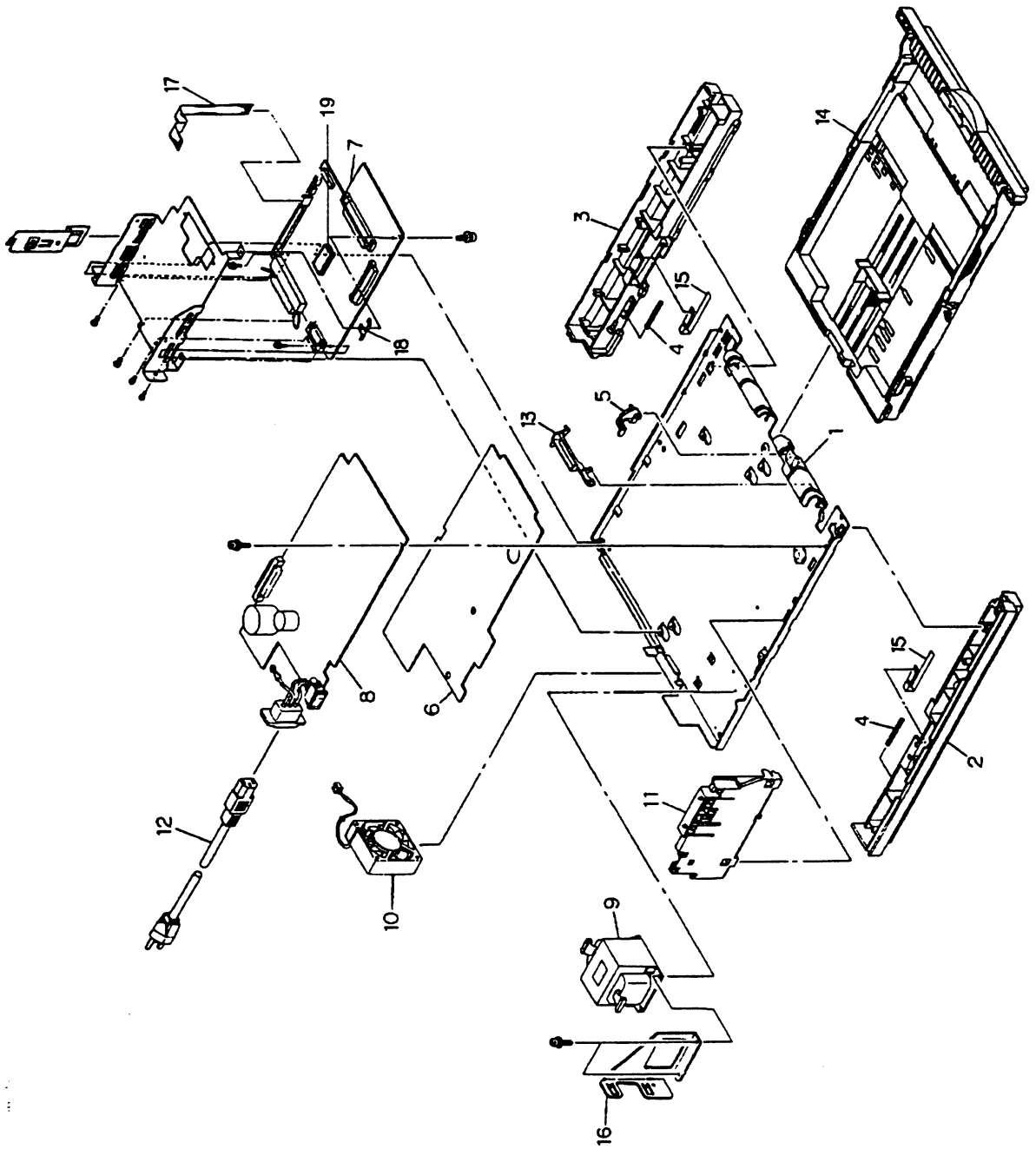


Figure 8-3 Base unit

Table 8-3 Base unit

No.	Name/Rating	Parts No.	Q'ty	Remarks
1	Base plate	2PP4083-6809G1	1	
2	Cassette guide L	3PP4083-6802G1	1	
3	Cassette guide R	3PP4083-6803G1	1	
4	Eject spring	4PP4083-6152P1	2	
5	Sensor plate (paper end)	4PP4083-6082P1	1	
6	Insulator	3PB4083-6144P1	6	
7	Control board (OLCW-11)	4YA4121-1007G11	1	
8	Power supply board	4YB4049-1766P1 change to 1777P1	1	230V See CN OL400e-039
9	Transformer	4YB4049-7033P1	1	230V
10	Fan motor	270A2165P0001	1	
11	Contact assy	3PA4083-6090G1	1	
12	AC cord (Continental)	3YS4011-1266P1	1	
	AC cord (U.K.)	3YS4011-1270P1	1	
	AC cord (Australia)	3YS4011-1329P1	1	
13	Cassette sensor plate	3PP4083-6154P1	1	
14	Paper cassette	1PA4083-6200G1	1	
15	Support spring	4PP4083-6153P1	2	
16	Inlet holder	4PP4083-6145P1	1	
17	Flexible cable (operator panel)	238A1071P0003	1	
18	Ground plate	4PP4083-6137P1	1	
19	EEPROM for OLCW-PCB	816A0303M0000	1	
	OLCB-PCB (RAM board)	4YA4121-1002G11	1	Option
	RAM chip set (1MB)	4YA4121-1008G1	1	Option

Appendix A RS-232C SERIAL INTERFACE

1) Connector

- Printer side : 9-pin plug
  Type DE-9P (made by Nihon Kouku Denshi) or equivalent
- Cable side : 9-pin receptacle
  Type DE-9S (made by Nihon Kouku Denshi)
  Shell
  Type DEU-9SF-FQ (made by Nihon Kouku Denshi) or equivalent

Note: Plug shall be able to be fixed with a lock screw.

2) Cable

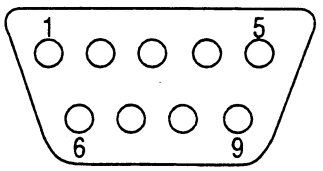
- Cable length: 6 ft (1.8 m) max. (Cable shall be shielded.)

Note: Cable is not supplied.

3) Interface signal

Pin No.	Signal name	Abbreviation	Signal direction	Data terminal ready
1	-			(Not used)
2	Received Data	RD	→ PR	Received data
3	Transmitted Data	TD	← PR	Transmitted data
4	Data Terminal Ready	DTR	← PR	Data terminal ready
5	Signal Ground	SG		Signal ground
6	-			(Not used)
7	Request To Send	RTS	← PR	Request To Send
8	-			(Not used)
9	-			(Not used)

- Connector pin arrangement



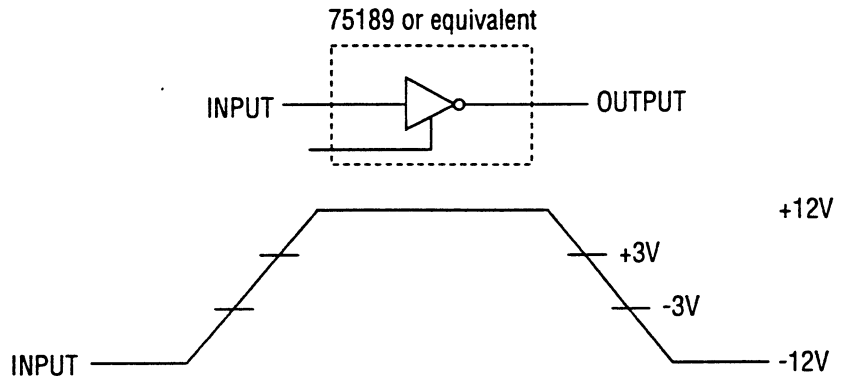
(As viewed from the cable side)

4) Signal level

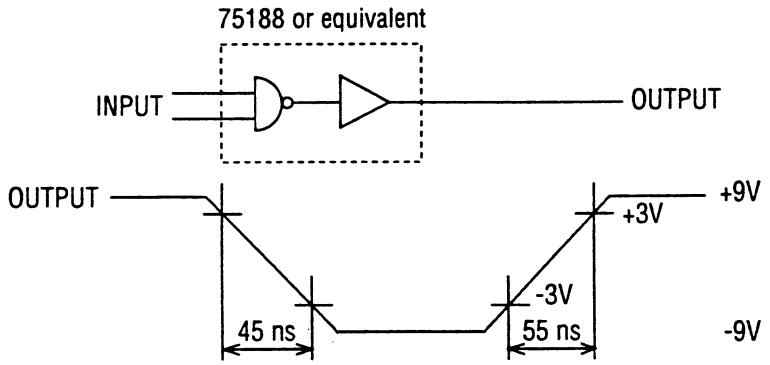
- MARK polarity : -3V to -15V (LOGIC = 1)
- SPACE polarity : +3V to +15V (LOGIC = 0)

5) Interface circuit

a) Receiving circuit



b) Sending circuit



Note: The above signal level is for when 3K ohms x 15pF is connected to the terminal.

6) Receive-marge

37% min. at all reception rates.

7) Communications protocol

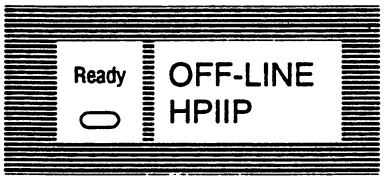
a) READY/BUSY protocol
b) X-ON/X-OFF protocol

8) Interface parameter setting

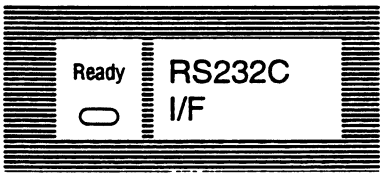
The following setting is possible by pressing ENTER / Copies key after selecting the display contents of the LCD of the operator panel by using NEXT + / Demo and LAST - / Paper Size keys.

Setting are maintained even when the printer power is turned off.

By pressing ON-LINE key, menu setting mode is completed and the printer returns to ON-LINE state.

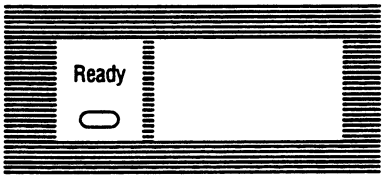


Keep MENU 1 / Menu 2 key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press MENU 1 / Menu 2 key 5 times.



"RS232C I/F" is displayed on the LCD.

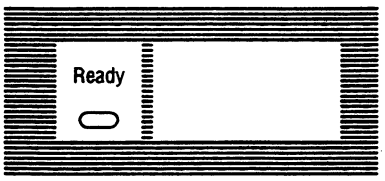
Press ENTER / Copies key.



Item	Flow CTL
Contents of Display	Function
DTR HI	SPACE-READY
DTR LO	MARK-READY
XONXOFF	
RBSTXON	Sending at intervals of 1 sec.

Factory Setting: DTR HI

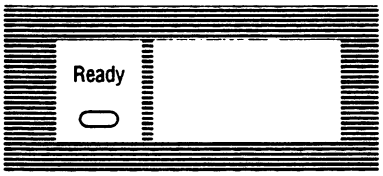
Press MENU 1 / Menu 2 key.



Item	Baud Rate
Contents of Display	Function
300	300 baud
600	600 baud
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud

Factory Setting: 9600 baud

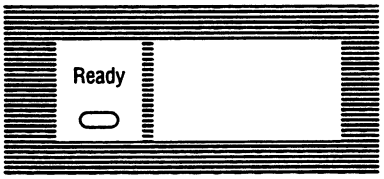
Press MENU 1 / Menu 2 key.



Item	Bit Length
Contents of Display	Function
8 BITS	8 bit
7 BITS	7 bit

Factory Setting: 8 bit

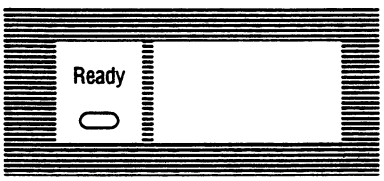
Press MENU 1 / Menu 2 key.



Item	Parity
Contents of Display	Function
NONE	No parity
EVEN	Even parity
ODD	Odd parity

Factory Setting: NONE

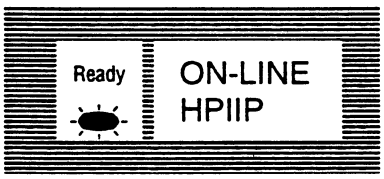
Press MENU 1 / Menu 2 key.



Item	Minimum BUSY Time
Contents of Display	Function
200 m SEC	200 ms
1 SEC	1 Sec (1000 ms)

Factory Setting: 200 m SEC

Press ON-LINE key.



Setting completed.

Appendix B CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle
  (single port) Type 57-40360-12-D56 (made by Daiichi Denshi) or equivalent
- Cable side : 36-pin plug
  Type 57-30360 (made by Daiichi Denshi) or equivalent
  Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

- Cable length : 6 ft (1.8 m) max.

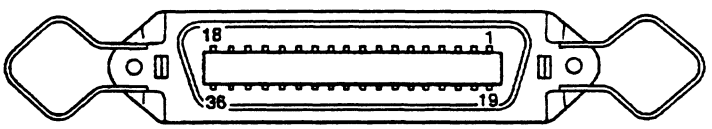
(A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Cable is not supplied.

3) Table of parallel I/F signals

Pin No.	Signal name	Signal direction	Functions
1	$\overline{\text{DATA STROBE}}$	→ PR	Parallel data sampling strobe
2	DATA BIT - 1	→ PR	Parallel input data
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4		
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	$\overline{\text{ACKNOWLEDGE}}$	← PR	Completion of data input or end of functioning
11	BUSY	← PR	During print processing or during alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	-		High level (3.3 kΩ)
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19 ⋮ 30	0V		Signal ground
31	$\overline{\text{INPUT PRIME}}$	→ PR	Initializing signal
32	$\overline{\text{FAULT}}$	← PR	End of paper or during alarm
33	0V		Signal ground
34	-		(Not used)
35	-		High level (3.3 kΩ)
36	-		High level (3.3 kΩ)

• Connector pin arrangement

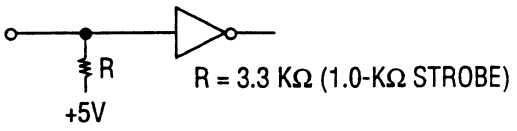


4) Signal level

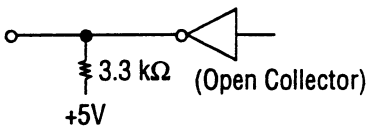
- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to 5.0 V

5) Interface circuit

a) Receiving circuit

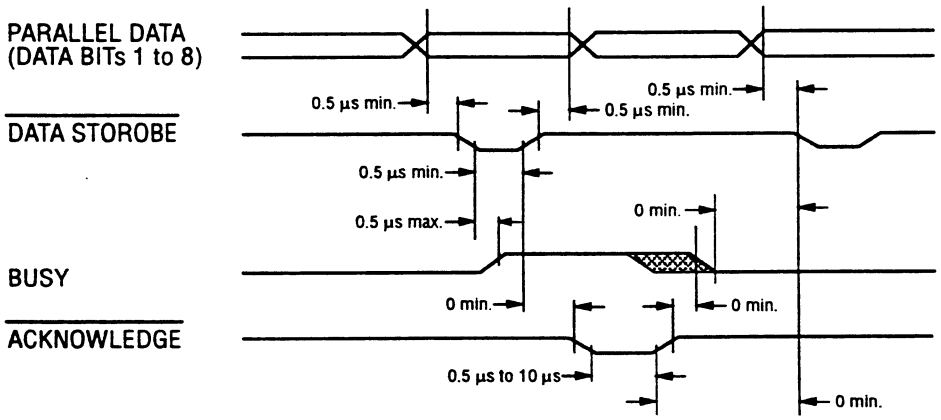


b) Sending circuit

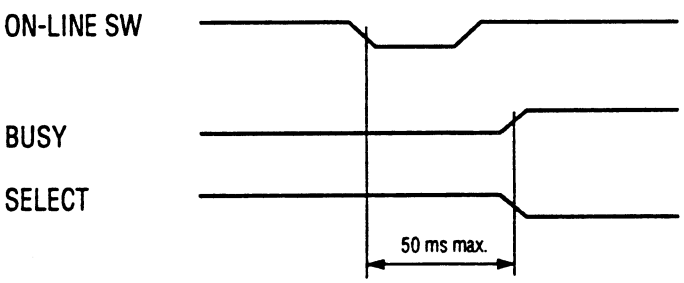


6) Timing charts

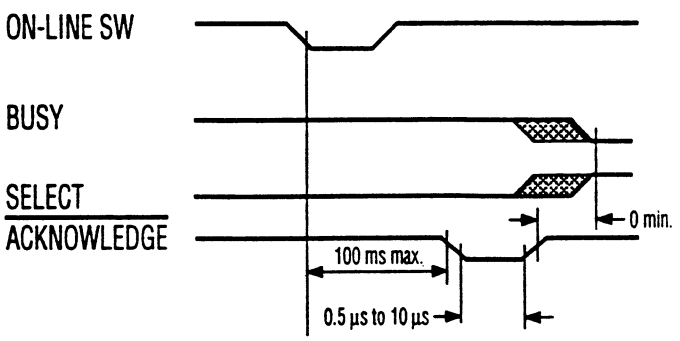
a) Data receiving timing



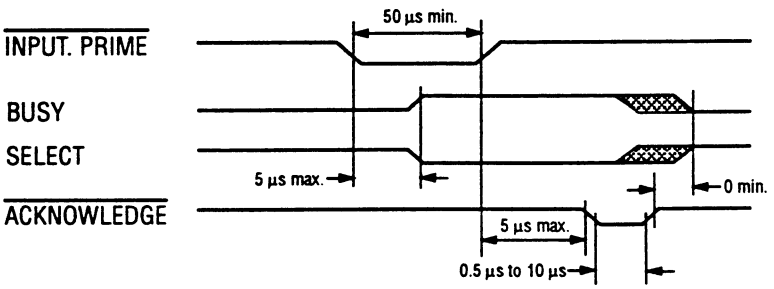
b) On-line → off-line switching timing by ON-LINE SW



c) Off-line → on-line switching timing by ON-LINE SW



d) INPUT PRIME timing (When set to the effective INPUT PRIME signal.)

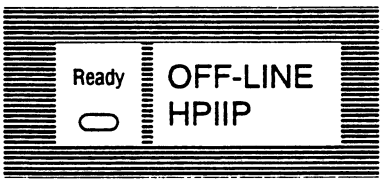


7) Interface parameter setting

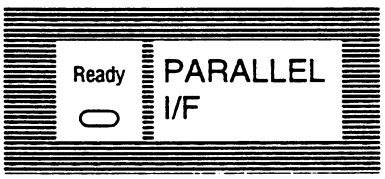
The following setting is possible by pressing ENTER / Copies key after selecting the display contents of the LCD of the operator panel by using NEXT + / Demo and LAST - / Paper Size keys.

Setting are maintained even when the printer power is turned off.

By pressing ON-LINE key, menu setting mode is completed and the printer returns to ON-LINE state.

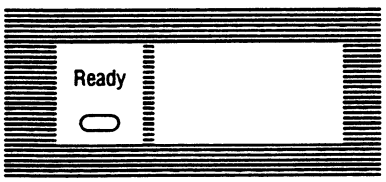


Keep MENU 1 / Menu 2 key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press MENU 1 / Menu 2 key 4 times.



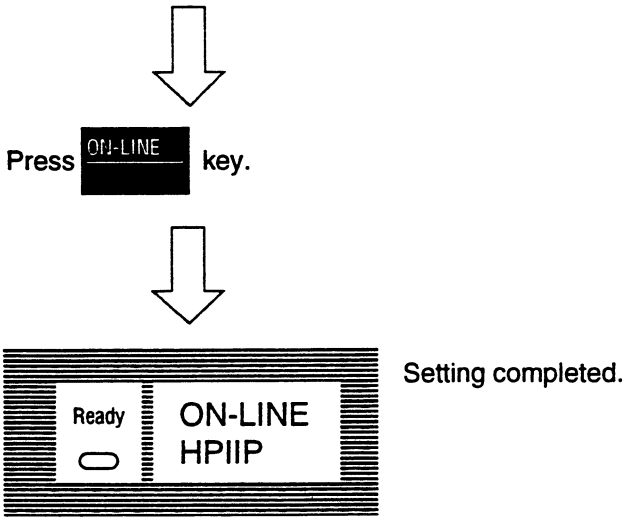
"PARALLEL I/F" is displayed on the LCD.

Press ENTER / Copies key.



Item	I-PRIME
Contents of Display	Function
OFF	I-PRIME signal ignored
ON	I-PRIME signal effective

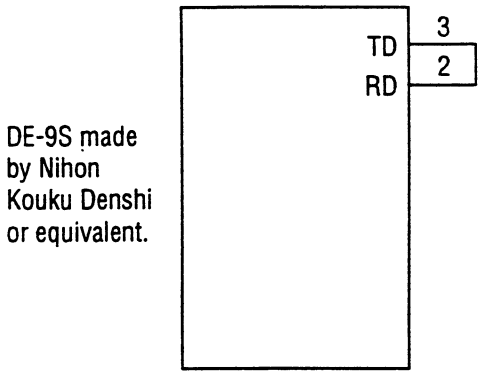
Factory Setting: OFF



Setting completed.

Appendix C LOOP TEST (RS-232C INTERFACE)

1) Connect the test connector



Test Connector Connection Diagram

2) Select "LOOP Test" in the system maintenance mode.
The codes transmitted from the TD signals are comparatively checked with the data received from the RD signals. Errors messages, if any, are displayed on the LCD.

Appendix D DIAGNOSTICS TEST

1. Maintenance Modes

- The maintenance modes consist of the user maintenance mode opened to the user, and the system and engine maintenance modes in the serviceman level not disclosed to the user.
- Press the Menu key to update each category. The operation returns to the first category after updating the last category.
- Press the Enter key to execute the function being displayed.
- To exit from any of these mode during category display, press the RECOVER or ON-LINE key and the operation mode starts.

1.1 User Maintenance Mode

- To enter the user maintenance mode, turn the power supply ON while pressing the Menu key.
- This mode uses the menu for function selection.
- The user maintenance mode provides the following functions:

(1) Hex dump

- The data received from the upper host is dumped in hexadecimal notation to the printer.
- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually be pressing the Form Feed key after setting the OFF LINE mode by pressing the ON-LINE key. (Automatic activation of printing even when the received data is less than one page by selecting the Auto Eject function on the menu.)
- The only way to exit from this mode is turning the power OFF.

(2) Menu reset

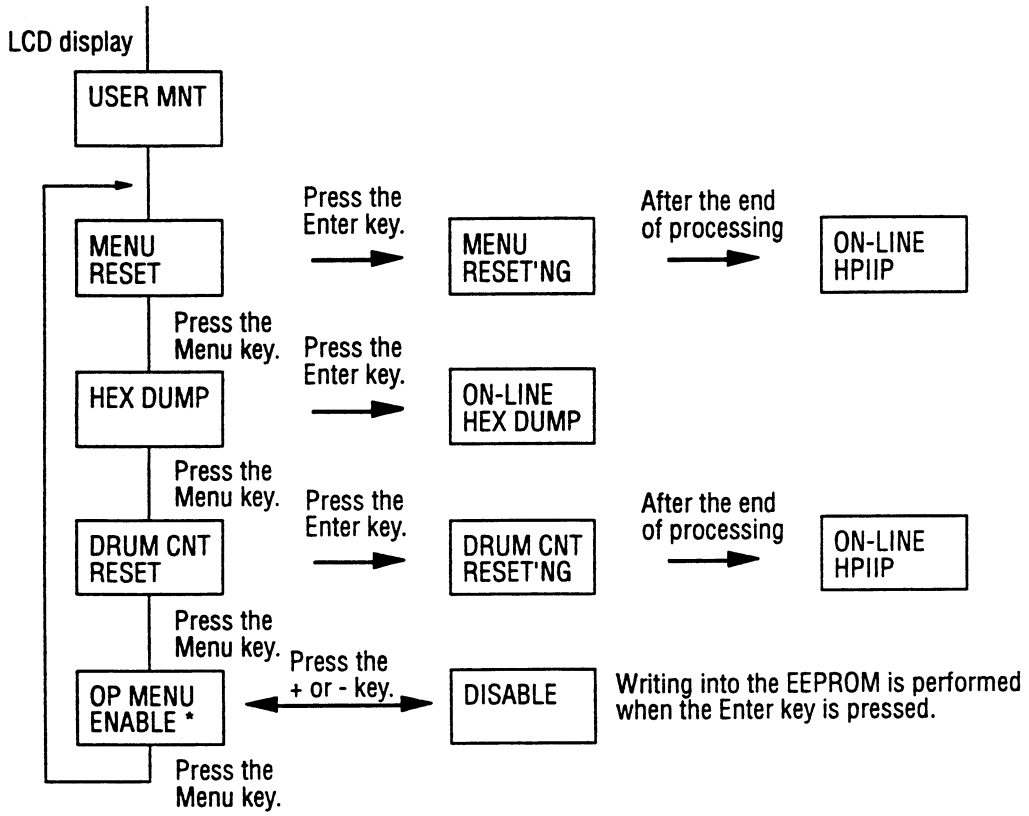
- All settings for Menu level-1 are reset to the factory default values.
  The menus for all executable emulations including options are reset to the factory default values.
- The operation mode starts automatically upon completion of resetting.

(3) Drum counter reset

- This function resets the drum life data when the user replaces the image drum unit.
- The operation mode starts automatically upon completion of resetting.

(4) Operator panel menu disable

- This function is for enabling and disabling the operation panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).



1.2 System Maintenance Mode

- The system maintenance mode is set when the power is turned ON while pressing the Recover key.
- This mode adopts the menu for function selection.
- The system maintenance mode is provided with the following functions:

(1) Page count display

- The total number of pages counted at the engine block is displayed on the LCD.

(2) Page count printing enable/disable

- This function selects whether to include (enable) or exclude (disable) the total number of printed pages counted at the engine block at the time of menu printing.

(3) Rolling ASCII continuous printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON-LINE key to cancel this mode.

(4) Loop test

- The loop test is for testing the serial I/F functions without connecting the printer to the host.
- The data is sent and received by loop back in the loop test.
- The loop test is performed even when any other interface is selected in Menu level-2.
- Installation of the loop connector is necessary for the loop test.
- The loop count is displayed in realtime on the LCD.
- When an error occurs in the course of the test, the corresponding error message is displayed.
- Press the ON-LINE key to cancel this mode.

(5) EEPROM reset

- All EEPROM areas including Menu level-2 to the factory default values.

- The following items are excluded:

  Head drive time setting

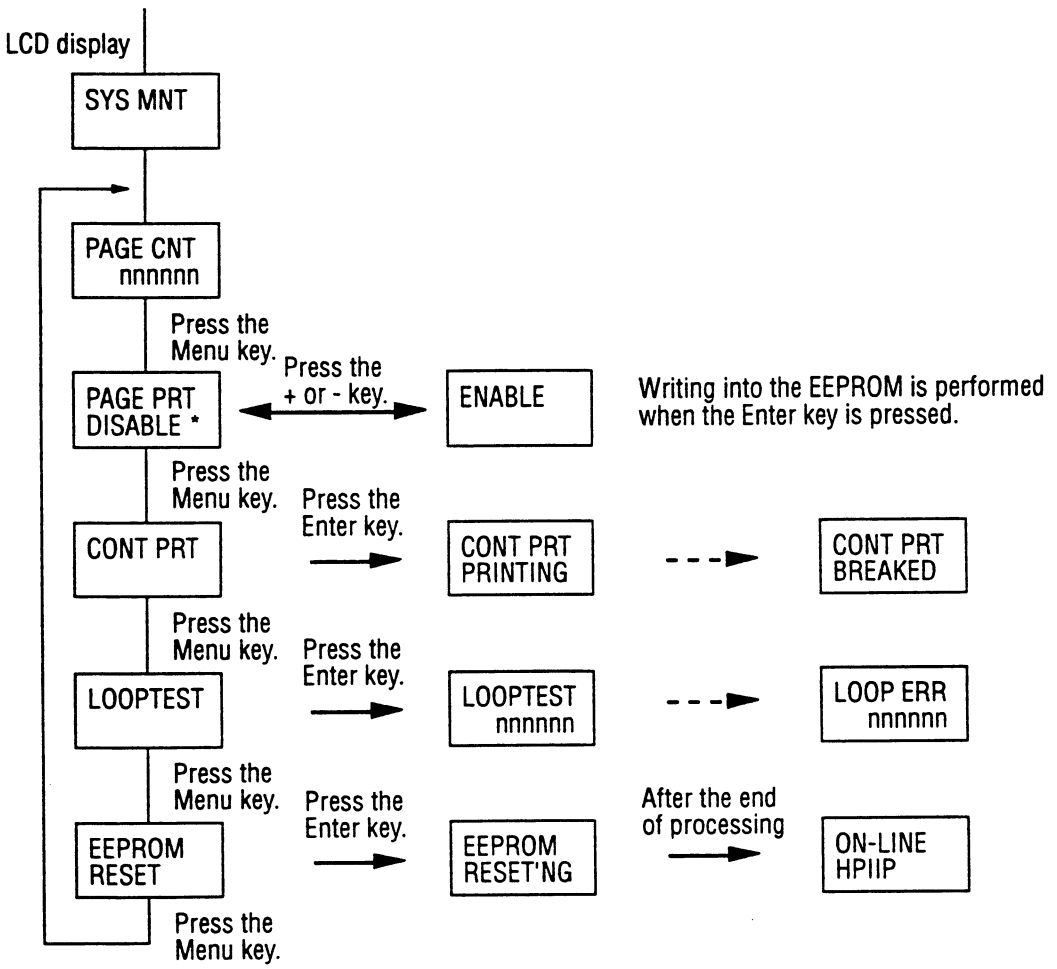
  Fine adjustment of printing start position

  Standard tray paper feed amount setting

- Transition to the operation mode occurs upon completion of resetting.

- Press the Menu key to update each category.
  The operation returns to the first category after updating the last category.

(1) System maintenance mode menu system



1.3 Engine Maintenance Mode

- The engine maintenance mode is activated when the power is turned ON while pressing to the Form Feed key and Enter key.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode is provided with the following functions:

(1) Head drive time setting

- Sets the drive time of the LED head.

(2) Printing start position setting

- Sets the printing start position.

(3) Drum count total display

- Displays on the LCD the total number of drum revolutions in the unit counted at the engine block.

(4) Drum count display

- Displays on the LCD the total number of EP drum revolutions counted at the engine block.

(5) Fuser count display

- Displays on the LCD the total number of printed pages counted at the engine block.

(6) Engine reset

- All EEPROM areas used by the engine block are reset to the factory default values.
- The following items are excluded:

  Menu level-1

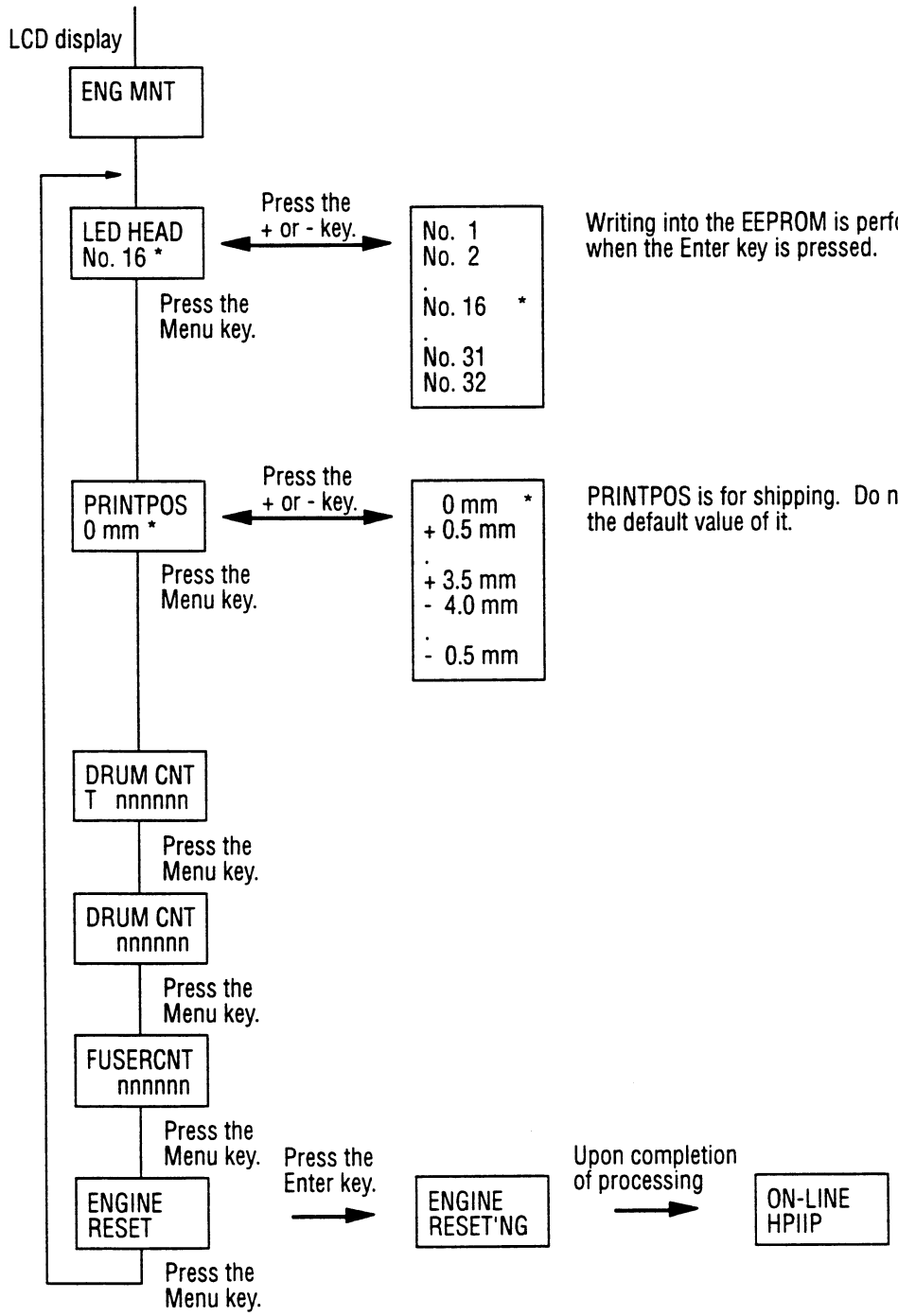
  Menu level-2

  Operator panel menu disable/enable

  Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

- Engine maintenance mode menu system



1.4 User Factory Set Operation

- Switchover between ODA and OEL users is possible by the user factory set operation.
- The user factory set operation is performed by turning the power ON while pressing both the Menu key and the NEXT+ or LAST- key.

(1) ODA factory set operation:

Turn the power ON while pressing the Menu key and NEXT+ key.

(2) OEL factory set operation:

Turn the power ON while pressing the Menu key and LAST- key.

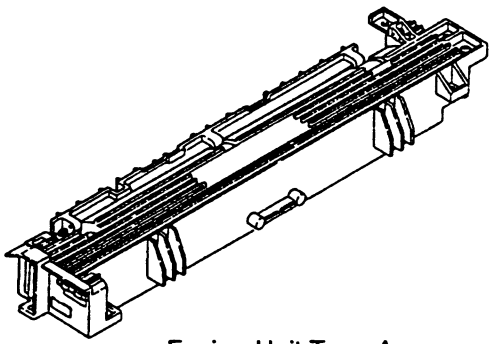
- After executing the user factory set operation, set the EEPROM areas for other than the engine block to the factory default values.

Note: At the time of shipment from the factory, setting corresponding to the destination is performed at the factory.

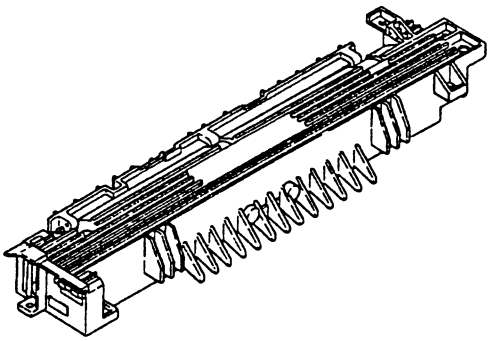
Appendix E

The fusing unit has two types (types A and B). They are used in the printers with the following serial numbers:

- Fusing Unit Type A ....up to and including S/N 303Axxxxx
- Fusing Unit Type B ....S/N 304Axxxxx onward



Fusing Unit Type A



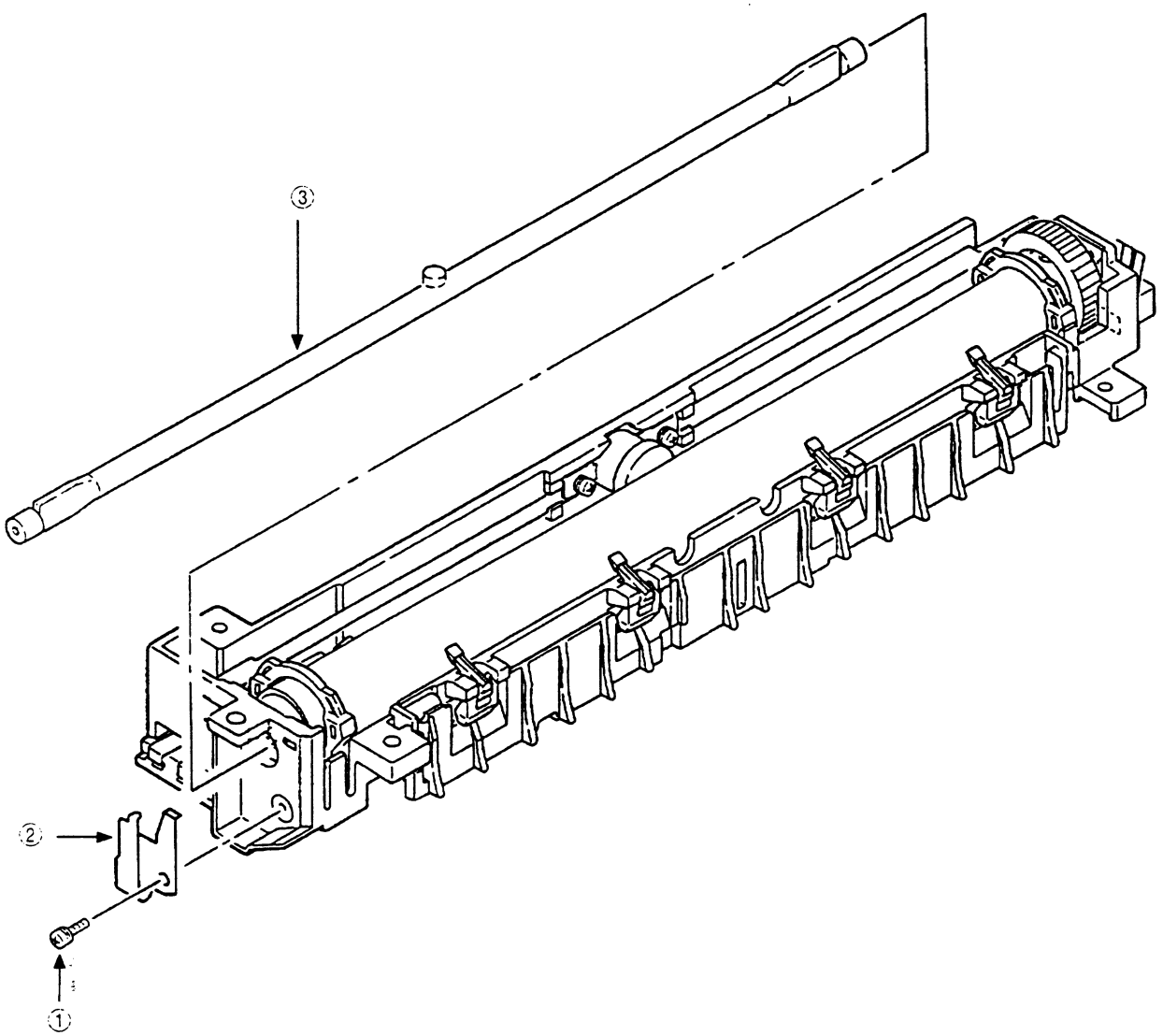
Fusing Unit Type B

The fusing unit for maintenance uses the type B. This cannot be applied to the printers with a serial number up to and including S/N 303Axxxxx. Therefore, if the fusing unit type A breaks down, exchange the following parts to repair it.

Exchanging parts	Parts No.	Remarks
Paper separation claw	4PP4083-6112P1	
Paper separation claw spring	4PP4083-6118P1	
Heater	3PB4083-6103P2	
Thermostat	4PB4083-6104P1	
Gear	4PP4083-6113P1	

E-1 Heater

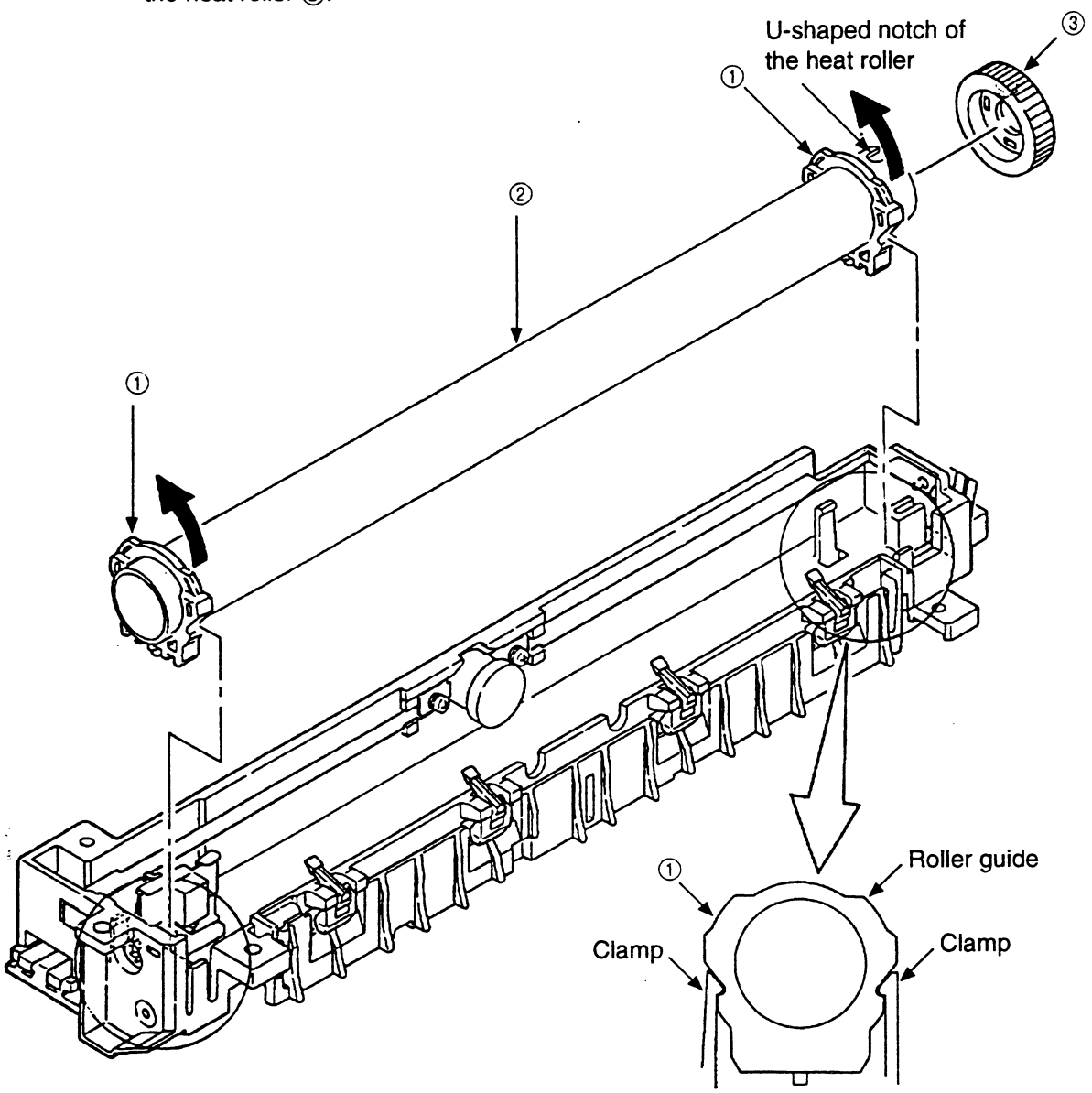
1. Remove the uper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the screws ① and then the heater guide ②.
4. Remove the heater ③.



E-2 Gear

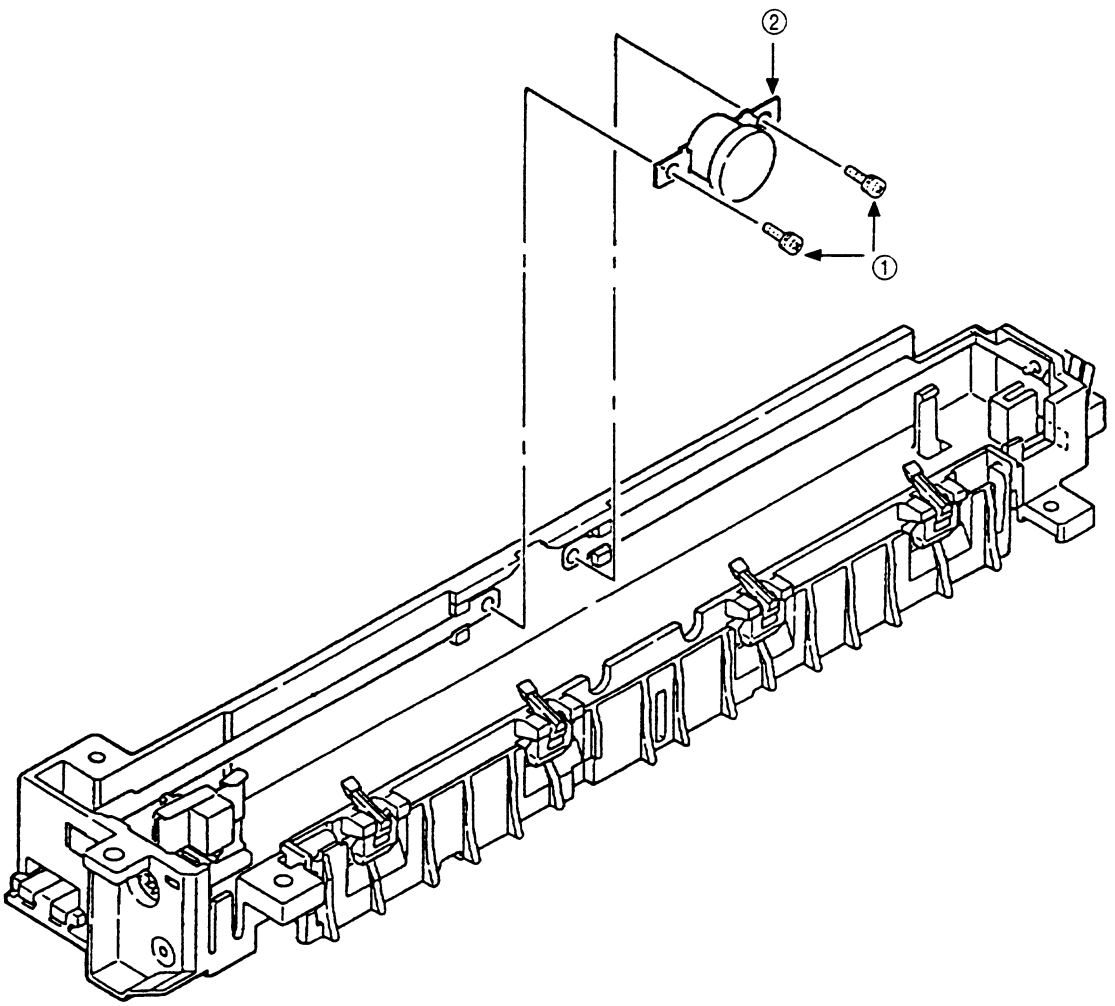
1. Remove the uppwer cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heater. (See E-1.)
4. Release the clamps holding the roller guides ① on the right and left sides of the heat roller ② and take out the gear ③ together with the heat roller ②. (Push the roller guides ① on the right and left in the direction of the arrow. Release the clamp on the front side first and then the clamp on the back side.)
5. Remove the gear ③ from the heat roller ②.

Note: When installing the gear, fit the projections of the gear ③ into the U-shaped notch of the heat roller ②.



E-3 Thermostat

1. Remove the upper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heat roller. (See E-2.)
4. Remove two screws ① and then the thermostat ②.

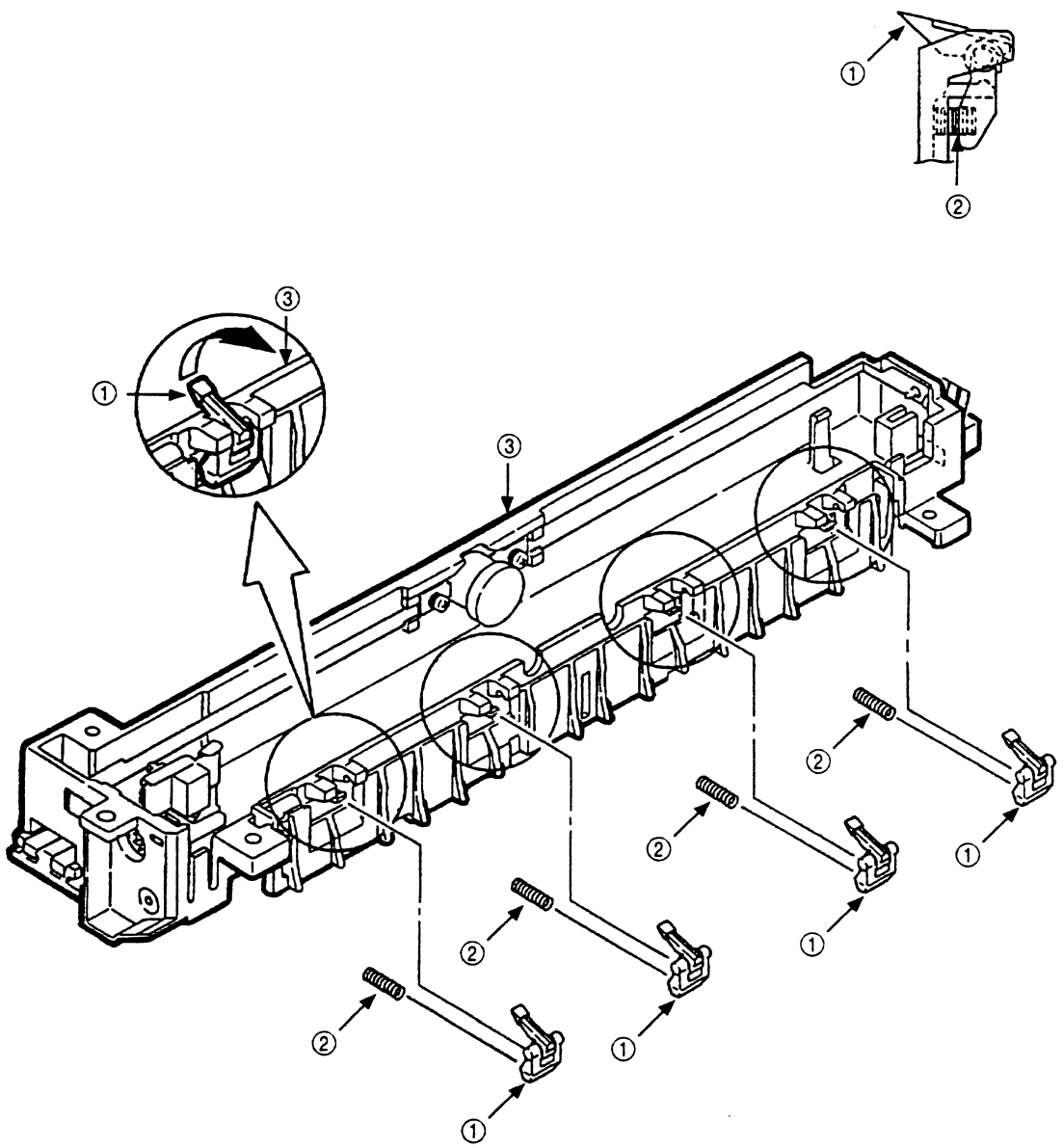


E-4 Paper Separation Claw, Paper Separation Claw Spring

Four paper separation claws and four paper separation claw springs are used.

1. Remove the upper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heat roller. (See E-2.)
4. Push the paper separation claws ① in the direction of the arrow and remove them. (At this time, the paper separation claw springs also become released. Take care not to lose them.)

Note: Install the paper separation claw springs ② after installing the paper separation claws ① on the fuser cover ③.



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M-521074 1A 7-93 Printed in Japan